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Transactions

OF THE

Medical Society

OF THE

State of California

Session of 1895

SAN FRANCISCO:
W. A. Woodward & Co., Printers, 12 Sutter Street
1895

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H. G. Brainerd, Los Angeles, - - *Second Vice President*
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H. Bert Ellis, Los Angeles, - - - *Assistant Secretary*
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W. E. Hopkins, G. J. Fitzgibbon, W. F. Cheney,
J. M. Williamson.

Alternates:—

J. H. Barbat, F. B. Carpenter, A. P. Woodward.

Board of Censors.

C. L. Bard, Walter Lindley, J. H. Davisson,
J. H. Utley, W. B. Lewitt.

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To the President and Members of the Medical Society of the State of California:

We beg leave to offer the Transactions this year a little earlier than ever before. The volume is unusually large, showing the interest members take in adding something useful to medical literature; and thanks to the *Occidental Medical Times* especially, we had a very full report of the discussions which add much to the value as well as to the size of this volume. The *Pacific Medical Journal* also aided with an extra report of a portion of the discussions.

We must again complain that some of the officials of the Society continue this year, as last, to delay us in the early issue of the Transactions.

A. P. WOODWARD, Chairman.
W. W. KERR,
S. R. MATHER,
H. E. SANDERSON,
Committee on Publication.

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MINUTES

OF THE

Twenty-fifth Annual Meeting

OF THE

Medical Society

OF THE

State of California.

FIRST DAY—MORNING SESSION, April 16, 1895.

The President, Dr. G. L. Simmons, called the meeting to order at 11 A. M.

The address of welcome was delivered by Dr. C. C. Wadsworth, of San Francisco, and was, on motion, referred to the Committee on Publication.

The President, Dr. G. L. Simmons, of Sacramento, delivered the annual address, which was, on motion, referred to the Committee on Publication. The recommendations contained therein were referred to the Executive Committee.

On motion of Dr. T. W. Huntington, of Sacramento, it was decided that when the Society adjourn to-day noon, it adjourn in memory of Dr. Oliver Wendell Holmes.

On motion of Dr. W. P. Gibbons, it was ordered that the address of the President be printed and circulated in pamphlet form. The number of copies and methods of distribution were, on motion, left to the Executive Committee.

An application from the Woman's Medical Club of the Pacific to be recognized by the State Society, was read and referred to the Executive Committee.

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The minutes of the morning session were read and approved, and the Society adjourned in memory of Dr. Oliver Wendell Homes.

FIRST DAY—AFTERNOON SESSION.

The meeting was called to order by the President at 2:25 P. M.

The Report of the Committee on Indigenous Botany, Materia Medica, Pharmacy and Medical Chemistry, was read by the Chairman, Dr. W. P. Gibbons, of Alameda. Subject: "The Relation between the Alkaloids, Atropia, Hyosciamus and Daturia." Referred to the Committee on Publication.

The discussion was opened by Dr. A. L. Lengfeld, of San Francisco, and participated in by Dr. R. G. Reynolds, of Upper Lake.

The report of the Committee on Histology and Microscopy was read by the Chairman, Dr. J. H. Wythe, of Oakland. Subject: "A Review of the Cell Doctrine." Referred to the Committee on Publication.

The discussion was opened by Dr. C. G. Kuhlman, of San Francisco, and concluded by Dr. Wythe.

A supplemental report was read by Dr. Thos. F. Rumbold, of San Francisco. Subject: "Facts taken from Histology that may Explain the Non-Extension of some Diseases until the System is Debilitated." Referred to the Committee on Publication.

The report of the Committee on Pathology and Pathological Anatomy was read by the Chairman, Dr. J. C. Spencer, of San Francisco. Subject: "Personal Observations in the Realm of Pathology." Referred to the Committee on Publication.

The discussion was opened by Dr. C. G. Kuhlman, of San Francisco, and was participated in by Dr. Thos. F. Rumbold, of San Francisco, and Dr. J. C. Spencer, of San Francisco.

A supplemental report was read by Dr. C. G. Kuhlman, of San Francisco. Subject: "The Status Presens of Antitoxic Blood Serum." Referred to the Committee on Publication.

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The report of the Committee on Clinical Medicine, including Diagnostics and Therapeutics, was read by the Chairman, Dr. David Powell, of Marysville. Subject: "Malaria—Its Causes and Effects." Referred to the Committee on Publication.

The discussion was opened by Dr. Wm. Watt Kerr, of San Francisco, and participated in by Dr. G. W. Davis, of San Francisco, Dr. R. G. Reynolds, of Upper Lake, and Dr. C. G. Kuhlman, of San Francisco.

At 5:40 P. M. it was moved and carried that the papers unread be postponed to some future session.

On motion, the meeting adjourned to 7 P. M.

FIRST DAY—EVENING SESSION.

The meeting was called to order by the President at 8:05 P. M. The minutes of the afternoon session were read and approved.

The report of the Committee on Medical Jurisprudence was read by the Chairman, Dr. G. F. Shiels, of San Francisco. Subject: "A Few Remarks on the Status of the Medical Expert Witness." Referred to the Committee on Publication.

The discussion was opened by Dr. W. E. Taylor, of San Francisco, and participated in by Dr. W. H. Mays, of San Francisco, Dr. H. G. Brainerd, of Los Angeles, Dr. Wm. Watt Kerr, of San Francisco, Dr. J. R. Laine, of Sacramento, and Dr. G. F. Shiels, of San Francisco.

Dr. Wm. Watt Kerr moved that the paper of Dr. Shiels be referred to the Executive Committee. Carried.

The report of the Committee on Obstetrics and Puerperal Diseases was read by the Chairman, Dr. Wm. Fitch Cheney, of San Francisco. Subject: "Laceration of the Perineum and its Immediate Repair." Referred to the Committee on Publication.

The discussion was opened by Dr. G. W. Davis, of San Francisco, and participated in by Dr. B. MacMonagle, of San Francisco, Dr. Henry Gibbons, Jr., of San Francisco, Dr. G.

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F. Shiels, of San Francisco, and closed by Dr. Wm. Fitch Cheney, of San Francisco.

The report of the Committee on Gynecology was read by the Chairman, Dr. Luke Robinson, of San Francisco. Subject: "Uterine Fibromata and Modes of Treatment." Referred to the Committee on Publication.

The paper was discussed by Dr. C. A. von Hoffman, of San Francisco.

A supplemental report was read by Dr. Charlotte Blake Brown, of San Francisco. Subject: "Rest, as a Therapeutic Means in Gynecology." Referred to the Committee on Publication.

The paper was discussed by Dr. Thos. W. Huntington, of Sacramento.

The Board of Censors reported favorably upon the following applications for membership in the Society: Dr. S. M. Rohr, Santa Rosa; Dr. F. W. Vowinckel, San Francisco; Dr. C. G. Levison, San Francisco; Dr. H. N. Rowell, San Francisco; Dr. M. H. Woolsey, San Francisco; Dr. C. F. Griffin, San Francisco; Dr. H. W. Strader, Sacramento; Dr. M. Regensburger, San Francisco, re-instated. Upon motion, duly carried, the Secretary cast the ballot for their election.

A supplemental report was read by Dr. W. H. Mays, of San Francisco. Subject: "Hysterectomy for Fibroids, a Plea for the External Treatment of the Pedicle."

The Executive Committee reported that they recommended that a Committee of Three be appointed to carry out the suggestions contained in Dr. Shiels' paper.

SECOND DAY—MORNING SESSION, April 17, 1895.

The meeting was called to order at 10:30 A. M. by the President.

A supplemental report on Clinical Medicine, by Dr. E. J. Overend, of San Francisco, subject, "Medical Men and Medicine Men," was read by the Secretary in the absence of the author. Referred to the Committee on Publication.

The report of the Committee on Medical Topography, Meteorology, Endemics and Epidemics, was read by the Chairman, Dr. J. H. Davisson, of Los Angeles. Subject: "Altitudes in

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California in Relation to Immunity from Tuberculosis." Referred to the Committee on Publication.

The discussion was opened by Dr. R. F. Rooney, of Auburn, and participated in by Drs. C. G. Kuhlman and J. H. Stallard, of San Francisco, and closed by Dr. J. H. Davisson, of Los Angeles.

The Board of Censors reported favorably upon the following applications: Dr. Fred. W. Birdsall, San Francisco; Dr. Adelaide Brown, San Francisco.

On motion, Dr. Birdsall's application was referred back to the Board of Censors and Dr. Brown was elected a member.

A supplemental report on Climatology was read by Dr. B. M. Gill, Dunsmuir. Subject: "The Medical Topography of Northern California." Referred to the Committee on Publication.

The discussion was participated in by Drs. C. G. Kuhlman and J. H. Stallard, of San Francisco, and closed by Dr. B. M. Gill.

The report of the Committee on State Medicine, etc., was read by the Chairman, Dr. W. R. Cluness, of San Francisco. Subject: "Progress in State Medicine." Referred to the Committee on Publication.

The discussion was opened by Dr. T. W. Huntington, Sacramento, and participated in by Dr. J. H. Stallard, San Francisco.

The Board of Censors reported favorably upon the application of Dr. Emmet Rixford, of San Francisco, and on motion the Secretary was instructed to cast the ballot for his election.

A supplemental report on State Medicine was read by Dr. M. M. Chipman, of San Jose.

The minutes of the morning session were read and approved.

On motion, the meeting adjourned.

SECOND DAY—AFTERNOON SESSION.

The meeting was called to order by the President at 2:20 P. M.

A supplemental report on Clinical Medicine was read by Dr. C. G. Kuhlman, of San Francisco. Subject: "The

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Status Presens of Inherited Tuberculosis." Referred to the Committee on Publication.

The report of the Committee on Publication was read by the Chairman, Dr. A. P. Woodward, of San Francisco. On motion, it was received and placed on file and the financial part referred to the Executive Committee.

A supplemental report on Clinical Medicine was read by Dr. A. E. Baldwin, of San Mateo. Subject: "Deposits in the Colon." Referred to the Committee on Publication.

The report of the Committee on Diseases of the Mind and Nervous System was read by the Chairman, Dr. H. C. Brainerd, of Los Angeles. Subject: "Peripheral Neuritis." Referred to the Committee on Publication.

The discussion was opened by Dr. A. W. Hoisholt, of Stockton, and continued by Dr. C. G. Kuhlman, of San Francisco.

The President appointed as the committee to act on the suggestions in Dr. G. F. Shiels' paper: Dr. G. F. Shiels, Dr. J. H. Parkinson and Dr. W. H. Mays.

A supplemental report on Diseases of the Mind and Nervous Diseases was read by Dr. J. W. Robertson, of Livermore. Subject: "Suggestion as a Therapeutic Agent." Referred to the Committee on Publication.

Discussed by Dr. G. F. Shiels, of San Francisco, Dr. E. H. Woolsey, of Oakland, and Dr. J. W. Robertson, of Livermore.

The report of the Committee on State Library was read by Dr. J. W. Parkinson. Referred to the Executive Committee.

The report of Board of Examiners was read by Dr. Chas. C. Wadsworth. Referred to the Executive Committee.

Dr. W. R. Cluness offered the following resolution:

"*Resolved*, That it is desirable immediately to restrict interments in intra-mural cemeteries with the object of closing them at the earliest possible dates, and that cremation should be encouraged as the safest and best method of disposing of the dead."

Referred to the Executive Committee.

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The report of the Secretary was read by the Secretary, Dr. Wm. Watt Kerr. Referred to the Executive Committee.

The report of the Treasurer was read by the Treasurer, Dr. J. H. Parkinson. Referred to the Executive Committee.

Dr. Wm. Le Moyne Wills, of Los Angeles, extended an invitation from the Los Angeles County Medical Association for the State Society to meet in Los Angeles in 1896.

It was moved that the Society meet in Los Angeles in 1896; the nominations were closed and one ballot was cast for Los Angeles.

Dr. Huntington, of Sacramento, placed the name of Dr. Wm. Le Moyne Wills in nomination for President, seconded by Dr. Gibbons. The nominations were closed, and, on motion, the Secretary cast the ballot for Dr. Wills for President.

The President elect was introduced to the Society.

Dr. Geo. C. Chismore was nominated for 1st Vice President. The nominations were closed, and, on motion, the Secretary cast the ballot for Dr. Geo. C. Chismore for 1st Vice President.

Dr. H. G. Brainerd, of Los Angeles, was nominated for 2nd Vice President; the nominations were closed, and, on motion, the Secretary cast the ballot of the Society for Dr. H. G. Brainerd, of Los Angeles for 2nd Vice President.

Dr. Gibbons moved that the President cast the ballot for the following officers: Dr. Wm. Watt Kerr, Secretary; Dr. H. Bert Ellis and Dr. Chas. C. Wadsworth, Assistant Secretaries, and Dr. J. H. Parkinson, Treasurer. Carried.

The following were placed in nomination as the Board of Censors: Drs. C. L. Bard, Walter Lindley, J. H. Davisson, J. H. Utley and W. B. Lewitt. The nominations were closed and, on motion, the Secretary cast the ballot for their election.

The following were placed in nomination for the Board of Examiners: Drs. H. H. Hart, W. B. Lewitt, C. C. Wadsworth, W. E. Hopkins, G. J. Fitzgibbon, W. F. Cheney and J. M. Williamson. The nominations were closed, and, on motion, the Secretary cast the ballot for their election.

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Drs. J. H. Barbat, F. B. Carpenter and A. P. Woodward were nominated as alternates. On motion, the nominations were closed and the Secretary cast the ballot of the Society for their election.

On motion, the Secretary and President were authorized to issue credentials to members wishing to attend the American Medical Association and other national meetings.

The Board of Censors presented a majority report on the matter of charges against Dr. Winslow Anderson, recommending that he be reprimanded. A minority report was presented stating that there was not sufficient evidence.

On motion, 5:20 o'clock Wednesday was fixed for hearing Dr. Anderson.

At 5:20 the charges against Dr. Anderson were read by the Secretary, and Dr. Anderson was heard in his own defense.

A motion to adopt the majority report was lost by 38 ayes to 18 nays,—there not being a three-quarters majority.

A motion to adopt the minority report was lost by 10 ayes to 44 nays.

A motion to indefinitely postpone was lost by 7 ayes to 33 nays.

A motion to adjourn was lost.

A motion to reconsider original motion to adopt the majority report was carried, and the majority report was adopted by 37 ayes to 9 nays.

Dr. R. L. Rigdon suggested that the punishment be inflicted by the President at once, and the President reprimanded Dr. Anderson.

On motion, the meeting adjourned until 7:30 P. M.

SECOND DAY—EVENING SESSION.

The meeting was called to order by the President at 8:30 P. M.

The minutes of the afternoon session were read and approved.

The report of the Committee on Dermatology and Venereal Diseases was read by the Chairman, Dr. R. L. Rigdon. Subject: "Quackery in Venereal Diseases." Referred to the Committee on Publication.

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The discussion was opened by Dr. J. Rosenstirn, of San Francisco, and was participated in by Dr. G. W. Davis, of San Francisco, Dr. Levi C. Lane, of San Francisco, and closed by Dr. R. L. Rigdon.

A supplemental report was read by Dr. Louis Bazet, of San Francisco. Subject: "Diseases of the Urinary Organs a Specialty." Referred to the Committee on Publication.

The report of the Committee on Anatomy was read by the Chairman, Dr. Geo. B. Somers, of San Francisco. Subject: "The Anatomy of the Wrist and the Hand with Reference to Cuts and Crushes." Referred to the Committee on Publication.

The discussion was opened by Dr. J. H. Barbat, and was participated in by Drs. Levi C. Lane, W. Winterberg, L. Bazet and E. H. Woolsey.

The report of the Committee on Surgery was read by the Chairman, Dr. R. A. McLean, of San Francisco. Subject: "Excision of the Rectum for Cancer—Amputation at the Hip." Referred to the Committee on Publication.

The discussion was opened by Dr. Levi C. Lane and participated in by Dr. G. F. Shiels, of San Francisco, Dr. C. G. Kenyon, of San Francisco, Dr. O. J. Mayer, of San Francisco, Dr. W. Winterberg, Dr. J. H. Wythe, of Oakland, Dr. D. W. Montgomery, of San Francisco, and Dr. D. D. Crowley, of Oakland, and Dr. C. G. Kuhlman, of San Francisco.

Dr. J. H. Parkinson gave notice of a motion to amend some of the By-Laws. Referred to the Executive Committee.

The Secretary read a communication from the Santa Clara County Medical Society, referring to advertisements in the Journal of the American Medical Association. Referred to the Executive Committee.

On motion, the meeting adjourned.

THIRD DAY—MORNING SESSION, April 18, 1895.

The meeting was called to order by the President at 10:30 A. M. The minutes of the evening session were read and approved.

The report of the Committee on Necrology was read by the Chairman, Dr. H. D. Lawhead, of Woodland.

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A supplemental report on Surgery was read by Dr. O. J. Mayer, of San Francisco. Referred to the Committee on Publication.

Discussed by Dr. D. W. Montgomery.

On motion, the supplemental report on Surgery by Dr. J. T. Stewart, of Los Angeles, was read by title and referred to the Committee on Publication.

The report of the Committee on Medical Education and Medical Legislation, was read by the Chairman, Dr. Thos. Ross, of Sacramento. Referred to the Committee on Publication.

The discussion was opened by Dr. Henry Gibbons, Jr., of San Francisco, and participated in by Dr. D. W. Montgomery.

A supplemental report on Surgery was read by Dr. C. L. Bard, of Ventura. Subject: "Castration for the Relief of Hypertrophy of the Prostate Gland." Referred to the Committee on Publication.

The paper was discussed by Dr. O. J. Mayer, of San Francisco; Dr. G. W. Davis, of San Francisco and Dr. T. W. Huntington, of Sacramento.

The Committee on Prize Essay reported by its Chairman, Dr. W. F. McNutt. Referred to the Executive Committee.

The report of the Committee on Diseases of Children, by the Chairman, Dr. E. S. Meade, of San José, was read by Dr. Parkinson. Referred to the Committee on Publication.

The discussion was participated in by Dr. L. M. F. Wanzer, Dr. Wm. Fitch Cheney and Dr. Adelaide Brown.

A supplemental report on Surgery was presented by Dr. H. Kreutzmann, of San Francisco. Subject: "Disinfection of the Hands." Read by title and referred to the Committee on Publication.

Dr. J. H. Parkinson gave notice to amend Section 3, Art. 2, of the Constitution, relating to permanent members, by changing 25 to 40 years.

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THIRD DAY—AFTERNOON SESSION.

The meeting was called to order by the President at 2:40 P. M.

The report of the Committee on Ophthalmology was read by the Chairman, Dr. H. Bert Ellis, of Los Angeles. Subject: "Symptoms and Treatment of Insufficiency of the Orbital Muscles." Referred to the Committee on Publication.

Discussed by Dr. W. F. Southard, of San Francisco.

A supplemental report was read by Dr. Wm. E. Briggs, of Sacramento. Subject: "The Relation of Errors of Refraction to Reflex Symptoms." Referred to the Committee on Publication.

A supplemental report on "Sexton's Operations and its Results," by Dr. W. Hopkins, of San Francisco, was referred to the Committee on Publication.

A supplemental report was read by Dr. K. Pischl, of San Francisco. Subject: "Scrofulous Inflammation of the Eye in Children." Referred to the Committee on Publication.

A supplemental report was read by Dr. H. I. Jones, of San Francisco. Subject: "Relation Between Affections of the Eye and Lesions of Other Parts." Referred to the Committee on Publication.

Dr. W. F. Southard, of San Francisco, read a supplemental report on "Our Children's Eyes." Referred to the Committee on Publication.

The following amendments to the By-Laws, offered by Dr. J. H. Parkinson, were then considered and adopted.

1. To amend Sec. 1, Art. IV, to read "Surgery and Surgical Anatomy."

2. To omit "Committee on Anatomy and Physiology."

3. To amend "the Committee on Dermatology and Venereal Diseases" to read "Dermatology and Genito-Urinary Diseases."

4. To amend "the Committee on Ophthalmology and Otology" by omitting the word "Otology."

5. To amend "the Committee on Laryngology and Rhinology" by adding "Otology."

Dr. Barkan moved to limit the time allowed to reading of papers to ten minutes. Carried.

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The title of the paper of Dr. Rumbold was at his request read by the Secretary and referred to the Committee on Publication.

Dr. A. Barkan, of San Francisco, read a paper on "Magnetic Operations with Cases." Referred to the Committee on Publication.

Discussed by Dr. K. Pischl and Dr. W. E. Briggs.

The Board of Censors made a report recommending the reinstatement of Dr. J. A. McKee, of Sacramento. On motion, the Secretary was instructed to cast a favorable ballot for the reinstatement of Dr. McKee.

Dr. W. A. Martin, of San Francisco, read a paper on "Atrophic Rhinitis." Referred to the Committee on Publication.

Discussed by Dr. J. D. Arnold.

Dr. Thos. F. Rumbold, of San Francisco, read a paper on "The Reasons for Supplementary Courses in the Treatment of Chronic Nasal Inflammation; the Times when these Courses should be Repeated, and their Number."

Discussed by Dr. W. A. Martin.

Dr. Kenyon, of San Francisco, moved that a vote of thanks be extended to Dr. G. L. Simmons for the very able and satisfactory manner in which he had conducted the business of the meeting.

The Executive Committee reported. The report was adopted and recommendations concurred in.

The dues of the Assistant Secretaries were, upon motion, remitted.

On motion, the meeting adjourned.

FOURTH DAY—April 20, 1895.

The Society met at 3:20 P. M., and, after completing the executive work of the meeting, adjourned.

WM. WATT KERR,
Secretary.
H. BERT ELLIS,
C. C. WADSWORTH,
Assistant Secretaries.

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Address of Welcome.

By C. C. WADSWORTH, M. D., Chairman of the Committee of Arangements.

Mr. President, Ladies and Gentlemen of the Medical Society of the State of California :

As Chairman of your Committee of Arrangements, it becomes my duty, as it certainly is my pleasure, to welcome you to another Annual Session, and to invite your earnest co-operation in the investigations held by this Society, in the interest of progressive medicine, as well as the business matters that may be presented for your consideration.

This hall, so complete in its appointments, has been secured with a view to your comfort and pleasure, and the latter, to our minds, is one of the most important features of our Annual Assemblies, as new acquaintances are formed, and old friendships cemented.

Those of you who find leisure to visit our hospitals and other public institutions, will be cordially welcomed,

We would also call your attention to the exhibits in the Banquet Hall (basement) of this building; the exhibitors have spared no pains to make an interesting display.

On Thursday evening as a fitting close to your labors, the San Francisco County Medical Society will honor itself by inviting you to a banquet, at the Palace Hotel.

And now, in conclusion, let me again express a sincere welcome to one and all, hoping that this twenty-fifth session may prove most successful, interesting and profitable.

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Address Delivered at the Opening

OF THE

TWENTY-FIFTH ANNUAL SESSION

OF THE

Medical Society of the State of California.

By G. L. SIMMONS, M. D., President.

One year ago when I received notice of my election as your President, I was in the midst of preparations for a prolonged vacation and absence from the State. A radical change was deemed necessary for my health, and had I earlier known of a mention of my name in this connection, I should at once have declined the honor, believing that I would not be able to serve you in an acceptable manner. As the selection was had, however, without this knowledge, I felt it to be my duty to accept the position, to somewhat abridge my vacation and to return home with an earnest desire to do all in my power to maintain this State organization of medical men—now the chief representative body of the two thousand practitioners of California. In acknowledging my indebtedness to you for the great honor you have done me by elevating me to this highest office in the gift of my profession, I ask your kind indulgence for any errors I may unwittingly commit as your presiding officer.

It would seem proper that I should first refer to the important medical event which has taken place in our State since your last meeting, and towards the success of which a liberal sum was voted out of your treasury. The gathering of the American Medical Association in San Francisco last June under your auspices, should be a subject for general congratulation. Not only were the members present from all over the Union, in excess of the most sanguine expectations, but

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the character of the papers received and read gave to the proceedings an unusual interest, and must secure to such a representative national body an enlarged influence. In accordance with the instructions given to your delegates, it was voted to make no change in the code, a majority believing that "the Ethics of the Fathers" are clear, concise and applicable to the varying conditions of professional life and knowledge. The magnificent entertainments given to members of the Association in this city and the good fellowships engendered therefrom, are also subjects of pride and universal satisfaction. I feel that we should specially recognize the value of the services of a few of our members in first presenting our claims for this national meeting, and in afterwards carrying out the preliminary work essential for its success.

It is made my duty in the Constitution to address you "upon some subject in harmony with the objects and aims of the Society." I propose therefore to offer some practical remarks upon a few topics which have been already discussed by the distinguished gentlemen who have preceded me in this office, but which, in my judgment, so intimately concern our welfare, that their re-introduction may not be unprofitable.

There are two prominent characteristics of age in physicians, who have passed the mid-period of active professional life, which prevents them from being wholly impersonal. The first is to deal largely in retrospection, and the second (from having seen the rise and fall of innumerable supposed systems and specifics for the cure of disease) to lack the essential credulity for unlimited faith in new discoveries in medicine until time and patiently recorded results and comparisons aid a solution of the important problems. Acknowledging these tendencies in my own case I need not apologise for a brief reference to the history of our profession in California. I do this with more confidence because my personal interest in medical science as youth and man about covers the period since the tide of gold seekers literally rushed to the then territory of California, and it is to the peculiar nature of this immigration that I have attributed not only many of the striking characteristics of our present population, but also the presence of these earlier pioneer traits in the medical profession

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itself, which has no doubt been one of the chief causes for the lack of interest in the fraternal association of its members.

Ever since our first annual meeting in San Francisco, just a quarter of a century ago, we have had the presidential services of men whose unselfish lives and devotion to principle have led them to deplore this want of a fully organized profession, but I believe no one has pointed out the fact that it is probable our feeble cohesive elements resulted from exceptional conditions which were not present in any other section of the American Union. Without question our immigration was originally composed of representatives from the most active and ambitious elements of the present century. For the first time in history there was offered to men of every nation a free and untrammeled field for the mining of precious metals. The costs of a journey by sea or land to this State, then far removed from the centers of population, the courage to face the greatest dangers, the health and youth essential to lead exposed pioneer lives, all combined to bring here an ambitious and self-reliant people overwhelmed by the desire for the sudden accumulation of wealth. The mental peculiarities of such a population formed a most original field for observation, and the leading traits were certainly those of independence, self-reliance, love of excitement, change, speculation and criticism. Very naturally the same features were also evident in the ranks of the medical profession. Here were representatives from all the leading medical schools of the world, each having the most unbounded faith in his own methods and education, speaking different languages, with habits and prejudices that had not been worn smooth by the rapidity of international travel and without the refining influences of home life. Is it strange that they were restless, impatient of restraint and ready to ignore the qualifications of rival practitioners? To the credit of many of these educated men we should place the fact that they were often the best organizers to develop out of chaotic conditions the institutions of this State, even if their medical work was marred by personalities and their dignity lowered by aggressive disputations.

Perhaps no better description of the profession as it existed at an early period can be given than that presented by our

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second President in his annual address. He said: "We are a heterogeneous mass, an army of incompatibles. No country in the world is supplied with physicians so diverse in character. We have all the peculiarities of all the schools in the world coupled with all the peculiarities of all the nations of the world. The physicians of California know less of each other than the physicians of any other land, and they care less for each other. There is no fraternity. Every man is for himself and thinks the best way to raise himself is by treading down others." With such an arraignment how necessary the first clause of our constitution that our objects are "To encourage the unity and harmony of the profession throughout the State."

From 1850 to 1860, several attempts were made to organize the profession into local and State Societies, but with few exceptions efforts in this direction were not a success. A review of the medical literature of that period, however, shows that even under the most unfavorable conditions for study, and amid all the excitements and changes incident to our pioneer life a fair proportion of the practitioners here applied themselves to original work and investigations. It should also be noted that many of our members were prominently interested in microscopy and botanical work, and that some of the most serious and important operations ever attempted were successfully performed and reported by the earlier surgeons of California. It is also certain they first demonstrated that the serous cavities of the human body and larger joints could be successfully invaded by the knife when necessary to preserve life or limb. At this period there were laid the foundations for our medical schools and hospitals which now stand the best of our educational landmarks. The self-sacrifice of the founders of these institutions, their discouragements and disappointments, their large donations of money, all show the grandest results of individual devotion to medical science. Since the first decade, in some sections of the State, the value of an organized profession has been recognized and maintained, but in others many practitioners stand aloof from association and do not see (as stated by your last President, Dr. Kenyon) the power of combined effort to elevate the profession and to maintain its influence. How to

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reach this class who add so little to the sum of medical knowledge, is an important question. In my judgment, much could be accomplished by this Society lending its influence in the formation of small district societies. This could be accomplished in the same way as has been done by organizers for fraternal and benefit organizations. As a practical method in an endeavor to add to our number and increase our associated influence I respectfully recommend the appointment of an officer whose duty should be to visit certain sections of the State and perform the initial work in this field of pioneer isolation and degrading jealousies. Let us so act that the close of this century, fraught with the grandest discoveries in medicine and surgery, may see us a united profession, and in close fellowship with our fellows throughout the world in the saving of human life and the relief of human suffering.

Since your last meeting the medical profession everywhere has been confronted with a question of great importance, involving, as it seems to do, a change in our system of therapeutics more radical than any advocated for many years. In the midst of the poly-pharmacy of the present day, with an accumulation of supposed remedies, even the names of which tax the best of memories, we witness a revival along bacteriological lines and see that the evil effects of diphtheria are often controlled by the direct use into the general circulation of a specially prepared serum. The literature upon this subject is so well known to you, as also the observation of certain cases, that it is unnecessary to refer to this branch of the subject. It may be said, however, that in no time in the history of medical science have societies like this assembled under a greater pressure of public interest in the determination of a question of a scientific nature. On both continents the public press is constantly publishing successes to such an extent as to interfere with accurate investigation, and governing boards that persistently opposed and neglected the investment of funds for healthy water supplies and proper sewage disposal are urging appropriations for experiments upon pathogenic germs often generated by their neglect of the simplest rules of preventive medicine. Let us trust that here and elsewhere the pangs of disappointed hopes raised in many a poor sufferer from tuberculosis may not be repeated in the parents of diph-

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theritic children. Ready as our profession always has been to examine the claims of any new agent in the treatment of disease, adopting from any source all means which may possibly inure to the benefit of the lives of those entrusted to our charge, may we not also, in the case of the new theory (with the State aid for the distribution of anti-toxine so recently bestowed) "Prove all things and hold fast to that which is good."

Of a few subjects of special interest to California practitioners one of the most important is that relating to compensation for professional work from those who are able to pay for the same. When it is considered that the length of time and expense attending a good medical education have been nearly doubled during the last twenty years, is it not deplorable that the incomes of a majority of physicians have been reduced to such an extent that many are in an impecunious position, and find it difficult under moderate demands to balance their receipts and expenditures. While a few practitioners in large centers have been paid extra fees and have obtained a certain degree of independence the great mass are held down by poverty. On all sides the services of medical men are underrated and courts, corporations and beneficiary societies appear to combine to reduce our compensation. The upright judge, who, without a smile, allows probate fees of thousands to young attorneys, haggles over an account of hundreds for medical services which generally involve a night and day attention in the presence of sights and scenes of the saddest or most terrible character. Corporation directors arrange a plan by which thousands of their well paid employees receive in hospitals or private homes the services of the most competent physicians and surgeons at a cost per capita so low that its insignificance should never be mentioned as an honest recompense, and a beneficiary society (one of the largest in our State) has recruited its membership upon the representation that doctors' bills will cost the member comparatively nothing. With facts like these before us how long will it be before the situation of our practitioners will be analogous to that which now obtains in some European cities where medical clubs absorb ninety per cent of the male population, or as in Birmingham where it is said competent medical men give their

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services and medicines at the rate of a penny per head per week. Without any desire to advocate interference with the freedom of individual action in so important a matter, I would respectfully ask, is not this growing custom a blow at equity and justice. In these days of the general recognition of the principle that the laborer is worthy of his hire, how comes it that the members of that calling who give more to the poor and to communities than all other professions put together, should have the value of their services cheapened, where present returns offer the smallest hopes for independence. My own feelings prompt me to say that if medical organizations do not adopt some means to remedy this evil, the profession as a whole deserves to be kept in poverty and to feel the pangs of leaving unprovided loved ones.

For many years the unwritten law of our profession has prevented its members from contributing articles upon medical subjects to the public press, even when they were smarting under the greatest misrepresentations. Publicity has been considered as belonging to the irregular and charlatan and as the life career of the honest physician is one of confidence it has not been deemed possible to attempt even a mild innovation which might yield to a betrayal of this important feature. As a result of this close polity we find a general misapprehension existing in the United States in regard to the education and methods of what we call the regular medical profession; and this misapprehension or want of knowledge of the truth has, in my judgment, had much to do with the spread of quackery and irregular practice throughout the Union. Let one of you lose your identity as a physician (as I have done during the past year) and mingle in general society and I am sure you will be amazed at the statements you will hear as to the practice of your chosen calling. In all parts of cultivated Europe the State so regulates this subject that the same evils do not exist, and the irregular is relegated to his proper position. But here, in free America, our people for years have been led into the most erroneous conceptions and no attempt has been made to publicly explain the true position occupied by our members. The average citizen divides all practitioners into three "pathies," the oldest fashioned of being "allopathy." In vain we say, individually,

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that there is no School of Medicine in the world that teaches such a "pathy" and no physicians who practice it or allow such a classification; that the name and definition were an invention of Hahnemann for his own purposes, the use of which conveys to the popular mind the idea of exclusive methods and dogmas, or an exactly opposite conception to what is true.

Quite early in the history of the American Medical Association the eminent Dr. Geo. A. Wood, in an annual address as President, made use of the following language upon this subject, which certainly embodies the sentiment of the regular profession. "As intelligent men we were taught and have always practiced the cure of disease by any and all methods which can be proven to be for the best interests of our patients, and we are bound by no limits other than those of truth and honor. Let us show, when the epithet of 'allopathist' is applied to us by others that it is false, inappropriate and offensive, and that the use of it is contrary to gentlemanly courtesy and the proprieties of cultivated society."

Our own State Society years ago passed a resolution in regard to this subject, which was published in our proceedings. As these books are seldom read by the public no apparent benefit was made manifest, and many editors, lawyers, the clergy and citizens generally still continue the use of the erroneous appellation. Having the fullest faith in the intelligence and fairness of my countrymen, and believing that when the truth is presented in a proper manner a majority will accept it, I recommend that an effort be made to enlighten the public upon the question of the true position of the medical profession, and the relation it sustains to all pathies, healers and faith cures.

One of the most difficult questions to present to the governing boards of cities and towns is that concerning the public health, and few outside of the profession understand that so common a disease as typhoid increases in proportion to the saturation of the soil with decomposing organic matter, and decreases in proportion as a city is well sewered and uses only pure drinking water. My object in referring to this particular subject is to emphasize the effort to discuss questions relating to preventive medicine before the public by means of

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free popular lectures. I believe it to be the duty of each one of us to aid college extension in this direction, and to give to every town the knowledge so necessary to maintain the public health.

Another direction in which our efforts would result in benefit to sufferers from disease, and to our State at large, is in keeping before the people of the whole country the superiority of our climate in many of the gravest affections. While it might appear that this subject had already been presented to the fullest extent by our members and boards of health, my opinion is that thousands of Eastern invalids are not aware that we have in many portions of our State peculiarly favorable conditions for the open air treatment of consumptives, which do not obtain in other sections. It should be remembered that one of the first causes for the rise and importance of the southern sections of California resulted from the reports on the climate of the coast counties made by your first President. During the past winter I have made some personal and comparative observations of the climate of the "Riviera," and it can easily be shown by the meteorological tables of Nice, Menton or Cannes, that we have a greatly superior climate in winter, while the number of our sunny days are beyond their utmost claims. For climatic reasons alone, thousands of Americans seek this section of the old world, still ignorant of the fact that in their own country, hardly five days' journey from the Atlantic sea board, without the risks and annoyance of a longer trip by sea, there exists a land of winter flowers, more beautiful and healthy than any in southern Europe. Dr. R. F. Rooney, of Auburn, has recently published a valuable article in *The Occidental Medical Times* upon the "Climate of the Sierra Nevada Foothills, and its Influence on Diseases of the Respiratory Organs." The general circulation of such observations as he has been able to make should certainly insure the attention of physicians of the whole country to an extensive section of our State for the relief of patients suffering from genuine asthma, bronchitis or incipient phthisis.

In closing this address I need not apologize for a brief reference to the loss our profession has recently sustained by the death of Dr. Oliver Wendell Holmes. Although to the public he was known, loved and honored for his literary work,

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among medical men his real labor was recognized as belonging to medical science. For thirty-five years he acted as full professor in the medical department of Harvard, and in his earlier career gave to the world a series of prize medical dissertations, full of original thought and investigation. If he had done nothing else for medical science than to bring the weight of his mind to the discussion in 1843 of the question of the communicability of puerperal fever from one patient to another by the "accoucheur," that one effort to establish a theory now everywhere acknowledged to be correct, and which has saved the lives of many mothers, entitles him to the gratitude of the entire profession. As a professor of anatomy he was recognized as prominent long before his abilities in general literature had shone upon the world. In the earlier efforts to develop the study of microscopy, Holmes was most active and original. Although at that time exercises in this department were not required by the faculty, his interest was so great that he formed classes for private instruction at his home on Montgomery Place, and I well remember the enthusiasm with which he related the fact that his object glass was of American manufacture and had been taken to Europe by Dr. Burnett, who, after challenging comparisons, had found it to be superior to any then known in the world. In connection with his earlier work in microscopy attention has been called in the *American Microscopical Journal*, by Dr. Ephraim Cutter, now of New York, to the fact that Holmes then taught the use of the instrument with direct illumination, the professor having an arrangement of his own, a six-inch black disk fastened to the tube and graduated so that turning the disk would act as a fine adjustment.

With such a professional record, and while his name is being honored by laymen in Europe as well as America, is it not most fitting that medical organizations, even on the shores of the Pacific, should not allow the brightness of his fame as poet and novelist to obscure the labors of years for medical science of a man spoken of in a late number of the *British Medical Journal* as "one of the most lovable and notable figures of modern medicine"? Apart, however, from his position as medical author or professor, we owe to Holmes a debt of gratitude for his constant desire, evident in his general literary

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work, to place the profession of medicine in its true position before the public. His keenest satires and vigorous treatment against charlatanism and irregular medicine may be found in connection with his most highly prized papers in the literary magazines of the day. In him the good doctor always spoke, although often under the name of "Autocrat" or "Professor." Without exception, the medical students who listened to his teachings carried through their lives a continual interest in what has been called his delightful personality, and his genial medical wisdom interspersed throughout his writings has done much to enliven the paths of the "Toilers who have no rest"—the overworked practitioners.

In 1860 Dr. Holmes delivered an address before the Massachusetts Medical Society, entitled "Currents and Counter Currents in Medical Science," afterwards published with an essay upon "Homœopathy and Kindred Delusions" and the four topics of "The Weapon Ointment," "The Tar-water Mania of Bishop Berkeley," "The Royal Cure of Scrofula," and "The History of Perkins' Metallic Tractors," all, as the author says, published to illustrate the ease with which numerous facts are accumulated to prove the most fanciful and senseless extravagances. If this work could be placed in the hands of the people to-day there would be less quackery and fewer delusions.

On the 10th of last October it was my privilege to stand by his open grave in the beautiful cemetery at Mount Auburn, and to pay silent worship to all that remained of the great man always in fellowship with youth, who forty years before had received me as a struggling medical student from the Pacific Coast. Truly he deserved a cheerful and serene old age, and a place among the "modern immortals."

"In love he practiced, and in patience taught,
The sacred art that battles with disease;
Nor stained by one disloyal act or thought,
The holy symbol of Hippocrates."

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Medicine.

MALARIA—ITS CAUSES AND EFFECTS.

REPORT OF THE COMMITTEE ON CLINICAL MEDICINE, INCLUDING DIAGNOSTICS AND THERAPEUTICS.

By DAVID POWELL, M. D., Chairman, Marysville.

Having reluctantly accepted the appointment of Chairman of the Committee on Clinical Medicine, including Diagnostics and Therapeutics, and with a high appreciation of the duties and responsibilities of the position, I beg you to bear in mind that if the report, which I now have the honor to submit, fails to reach the standard of excellence which has hitherto distinguished the work of this Committee, the fault should be charged to our esteemed President, whose wide experience and discriminating judgment ought to have enabled him to use more discernment in the selection of the Chairman of so important a committee.

The title "Clinical Medicine" clearly indicates that the Society expects from the members of this section a practical consideration of the phenomena of diseases, their pathology, diagnosis, and treatment based on useful lines, rather than an elaborate treatise or exposition founded upon experimental and theoretical conclusions. And since it would be obviously impracticable within the limits of this report to consider, even in the most succinct manner, a very large number of the 2,400 or more "ills which flesh is heir to," I will present for your discussion the subject of Malaria, its causes and its effects, with special reference to those forms of malarial diseases most frequently encountered in this State.

What is Malaria?—Two of the most important achievements in pathology, of modern times, were the almost simultaneous discoveries of the bacillus tuberculosis by Koch, and of the

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plasmodium malariæ by Laveran. The former was received with the greatest enthusiasm and *eclat* by the profession in every part of the world; the latter created scarcely a ripple of excitement, and until very recently attracted but little attention either in this country or in Europe. Yet, viewed from a practical standpoint, the discovery of Laveran is infinitely the greater. The bacillus tuberculosis is said to cause one-seventh of the total mortality of mankind; the malarial micro-organisms. directly and indirectly, not less than one-half. The study of malaria is, therefore, interesting upon theoretical grounds alone, while from a clinical point of view, there is scarcely a disease that assumes a greater practical importance; for, notwithstanding the assertion of a modern high authority (Osler) that malarial fever is rare on the Pacific Coast, we are forced to admit that it prevails, especially throughout the great interior valleys of the State, to an extent and with a persistency true of no other disease. Among the prevailing diseases reported to the Secretary of the State Board of Health during the past year from different localities in the State, representing only a small percentage of the total population, the number of cases of malarial fevers outnumber those of pneumonia and typhoid fever more than two fold. While these reports do not furnish sufficient data upon which to base even an approximate estimate of the actual number of cases treated, they indicate the wide-spread existence of paludal fevers in this State; and the possibility is suggested, in the light of recent etiological investigations, of their diminishing prevalence in the future by the employment of proper prophylactic measures. And, though perhaps a digression, let me here remind you of the overwhelming importance which the study of prophylaxis is assuming in all departments of the medical science. The discovery of disease-producing germs, and their recognition as the causative factors in the development of so many infectious and preventable diseases, mark an epoch in the history of medical progress. The *savants* who are working in this field of research, have already laid the corner stone upon which the future edifice of ideal medicine will be erected; the completion of which will relegate the curative art to a position subordinate to the science of prophylaxis. Then will the physician be more engaged and more concerned in the study of

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preventive medicine than, as at present, in the observation of the phenomena of diseases and the application of remedial measures.

The erroneous theories which prevailed, until within the past few years, of the pathology of malaria rendered the study of the prophylaxis of the diseases attributed to it, to a great extent unprofitable. Until the description by Lavaran of the malarial parasites found in the blood of persons affected with paludal fever, the highest medical authorities (while some admitted the possibility of the existence of malarial micro-organisms) were agreed that nothing definite was known of the physical or chemical characters of the malarial poison. Yet, from the time when medicine was first practiced as an art by the priest physicians in the Temples of Health of ancient Greece, down through all the ages, various hypotheses have been advanced which were believed by different observers to account for the etiology of the periodic fevers. Thus, Hippocrates, the great philosopher and renowned physician, nearly twenty-five centuries ago taught that tertians and quotidians were due to a superabundance of bile in the primæ viæ, and quartans to atra-bile. Galen attributed quotidians to an alteration of the pituita, tertians to that of the bile, and quartans to putrescence of the atra-bile. The atomists said that quartans were the result of an obstruction occasioned by the minutest atoms, tertians by those a little larger, and quotidians by the largest. Darwin attributed the phenomena of intermittence to the nutritive movement of composition and decomposition, and the periodical recurrence of waking and sleep; Werlhof referred it to the periodical movement of the earth; Mead and others, to lunar influence and to the alternate action of day and night; Bailly endeavored to show that morbid intermittence is occasioned by the diurnal change in the position of the human body from the upright to the recumbent position; while Dr. Oldham, of the Bengal Medical Service, as late as 1871, wrote a book in which he attempted to prove that malaria as a specific poison does not exist, but that the diseases attributed to it are produced by chill, or sudden abstraction of animal heat. According to his view, the extreme susceptibility to cold, which is caused by long continued exposure to great heat, intensifies the predisposition to these

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diseases, thus causing their great prevalence in hot climates.—(*Dr. Sternberg, U. S. A., 1884.*)

These theories, in the light of present more accurate knowledge of the nature of malaria, are perhaps somewhat amusing, some of them even absurd, but they serve to illustrate how long and tedious, how beset with difficulties, is the pathway of the investigator in his efforts to fathom the occult qualities of disease, and how many centuries of untiring research are often occupied in the elucidation of a single scientific truth. The thought reminds us of the memorable exordium to the incomparable aphorisms of Hippocrates—a work which has been described as "a performance surpassing the genius of man," and beyond dispute the most remarkable production handed down to us from antiquity—the familiar words:—"Life is short, and the art long; the occasion fleeting, experience fallacious, and judgment difficult."

The alleged discovery by Klebs and Tomassi-Crudelli, and more recently by Professor Freire of Rio Janeiro, of a bacillus malariæ has not been confirmed, while the testimony of many competent observers who have demonstrated the constant presence of the plasmodium of Laveran, in all forms of malarial diseases, is convincing; and it is now generally conceded that these pathogenic organisms are the specific cause to which the morbid phenomena of malaria are due. Unfortunately, however, our "knowledge of these malarial parasites has thus far not added scientific accuracy to the study of prophylaxis. We do not know where or in what form the pathogenic organisms exist outside of the body, nor have we exact ideas as to their mode of entrance." (Hare's System of Practical Therapeutics, Vol. II.)

Since the term malaria—signifying atmospheric contamination—is by common consent adopted as the name of the special poison which produces paludal fevers, the introduction of the pathogenetic germs through the respiratory passages would be naturally inferred; and many still hold that the air, laden with the malarial posion, is the principal medium of infection. There is much reason to believe, however, that the causative micro-organisms of these diseases oftener find entrance into the system through the alimentary canal, and that

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malaria is, in a very large proportion of cases, essentially a water-borne disease.

Dr. Laveran in his classical work on paludism, published by the New Sydenham Society 1894, says:—"Numerous facts tend to prove that the infection may take place through drinking water, and that persons who have contracted paludism (malarial fever) have almost always made use of water of palustral (with humid or marshy soil) localities." And in support of this statement he says further, "It has been found repeatedly that in the same localities, among persons living under the same conditions but drinking water from different sources, some were attacked by palustral fever while others escaped. In certain localities which were formerly insalubrious it has been sufficient to place pure water at the disposal of the inhabitants instead of the stagnant water which was formerly used, for palustral fever to disappear; and in localities otherwise healthy, people may contract fever whose drinking water comes from unhealthy localities, and the persons most exposed to infection in these conditions are those who consume the most water." Again, "travelers passing through unhealthy countries often succeed in escaping fevers by only drinking water that has been boiled, while people who do not take that precaution suffer severely."

Mr. Parkes also, in his Manual of Practical Hygiene, cites many instances wherein it was conclusively shown that malarial fever resulted from the use of contaminated water. Dr. Russell of the Bengal Medical Service states as a result of his personal experience during seven years' observation in one of the most intense malaria-producing regions of India that he is "convinced of the marked immunity from malarial affections enjoyed by persons who, though living continuously in this typically malarious region, yet carefully avoid introducing the misasm into their system in their drinking-water." It is well know that the Chinese on this Coast enjoy a remarkable freedom from malarial and enteric fevers. Though many of them live in most unhealthy localities, and though their habitations are invariably surrounded by the very worst sanitary conditions, they rarely suffer from these diseases; a fact attributable, I think, solely to their tea-drinking propensity.

As the usual source of infection in enteric fever is admit-

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tedly the presence of the typhoid bacillus in potable water, so the experience and researches of so many careful observers, the number of whom might be multiplied almost indefinitely, lead to the conclusion that the specific poison of malaria finds access into the system through the same medium. But it cannot be said at this time that the question is determined. Quite opposite views have been expressed upon the subject by equally creditable authorities, and more exact knowledge concerning the mode of infection must be acquired before all that is desirable can be accomplished in the way of prophylaxis. Meanwhile, and as a primary measure, every effort should be made to reduce to a minimum the development and activity of the malarial organisms. Certain telluric conditions are recognized and known to exist in regions where paludal fevers prevail. Modern sanitary engineering has demonstrated that these conditions may often be corrected. To this end swamp and marsh lands should be drained, the planting of trees and cultivation of the soil encouraged. Lowlands subject to overflow should be filled in and planted and the ground covered with the Bermuda or other strong, deep-rooted grasses. Economic considerations alone would suggest the inauguration of such sanitary improvements under government control, and at the expense of the public treasury.

The ancient Romans fully realized the importance and necessity of such hygienic measures. The remains of the extensive excavations made to drain the Roman Campagna, an intensely fever-infected district, and of the costly aqueducts constructed to supply their city with pure water from the mountains of distant Tivoli, are evidences of their skill in sanitary engineering, the high state of perfection which the art of practical sanitation had attained even at that early period, and of their appreciation of the economic value of the preservation of the public health.

From the wide-spread prevalence of malaria in this State it is evident that little has been attempted so far in the way of adopting means for its elimination; yet intelligent and persevering efforts in this direction would unquestionably lead to very great improvement, if not the extermination from many a fertile plain and valley of a serious and preventable disease. As some one has aptly said, "Science has enabled us literally

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to place our finger upon this enemy of our race, and why should we hesitate to crush it?"

It is true that we do not here often encounter the grave types of paludal fevers that are endemic in the Southern and South-western States. In my experience cases of pernicious malaria in California are rare; and the more severe forms of malarial diseases are not so common as they were in the early settlement of the State. At that time, as many of you can bear witness, among the pioneer and sturdy throng which dwelt along the banks of the Sacramento and the San Joaquin Rivers and their tributaries few escaped an attack of intermittent or remittent fever; and the number of unmarked graves where rest the remains of those adventurous argonauts who, in their feverish delirium gathered phantom nuggets of gold, and who finally succumbed to the inevitable, will never be known. In marshy districts along the coast also, and upon the water front in San Francisco where the first settlers pitched their tents, these diseases were not infrequently observed. Since that time many changes in our environments—including cultivation of the soil, improved sources of water supply, the rapid growth of cities and towns, etc.—have modified to a great extent the intensity of the malarial poison; and yet in many communities it still finds numerous victims, causes annually an enormous loss of time and labor, serious suffering, and often even graver results.

The effects of malarial intoxication—the nature of the morbid phenomena induced by the miasmatic germs—are influenced by climatic, meteorological, and telluric conditions, and also by racial and individual susceptibility. According to their geographic distribution, therefore, there are many types of paludal fevers differing in virulency and clinical characteristics.

Malarial Intermittent Fever.—In this State the forms most commonly encountered are the quotidian and tertian types of intermittent. After a period of incubation varying from four to fifteen days, during which there is experienced more or less severe prodromal symptoms relating mainly to the nervous and digestive systems, a paroxysm occurs, the three stages of which, following each other in orderly sequence and succeeded by complete apyrexia, are pathognomonic of its malarial origin.

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The hectic fever of phthisis, the initial chill of pneumonia, and the intermittent rigors, pyrexia and sweating of septic infection closely resemble the same symptoms in intermittent fever; but in these we have the physical signs of local disease and the irregularity of the recurrence of the paroxysms which render the differential diagnosis less difficult. If we add the therapeutic test of the cinchona alkaloids every doubt in diagnosis is usually removed; for, as Osler says, "If the practitioner will take to heart the lesson that an intermittent fever which resists quinine is not malarial, he will avoid many errors in diagnosis."

Malarial Remittent.—Next in order of frequency, on this coast, are the remittent and continued fevers. Indeed, during the autumn months they are even more prevalent in some localities than the intermittent type, from which they differ mainly in the duration of the fever and the absence of complete intermissions between the paroxysms. Etiologically they are identical, and the distinguishing clinical features of remittent fevers are usually ascribed to great individual susceptibility and to the intensity of the malarial poison. It is not improbable, too, that the continued character of the fever may be attributed to the constant presence in the blood of the malarial micro-organisms in various stages of development. When the parasites are destroyed, either under the influence of drugs or by their own metabolic products, their toxic effects disappear and complete apyrexia ensues; but if their destruction is not total there is only a brief remission in the febrile movement before another generation matures, exacerbation of fever follows, a remission again occurs, and so the cyclical symptoms go on.

The discovery of Laveran has made clear many obscure points regarding malarial continued fevers, particularly with reference to diagnosis. Their early discrimination from other forms of continued fevers, including typhoid, "is one of the most valuable results of modern clinical investigations." In every case an accurate and definite diagnosis can be made through the examination of the blood; and this is the more important in view of the fact that this group of diseases is known to be amenable to specific treatment, by means of which a rapid recovery is made possible.

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Under the name *typho-malarial* is incorrectly classed a form of remittent fever—not infrequently observed in this State—which does not yield readily to treatment and in the course of which certain adynamic symptoms are developed. The word was introduced by Dr. Woodward of the United States Army during our civil war, and, as he says, was not intended to designate a "specific and distinct type of disease, but is simply a term which is conveniently applied to the compound forms of fever which result from the combined influence of the causes of malarious fevers and of typhoid fever." Properly used, therefore, it designates a mild form of enteric fever with malarial infection, and can not be classed among paludal diseases; but the term is so often applied to adynamic forms of remittent fever, and its use in that connection is so misleading, that its exclusion from our nosological tables would avoid confusion, and would be in the interests of accuracy in nomenclature. This form of remittent fever almost invariably occurs near the end of summer or after the first autumnal rains, when the maximum and minimum diurnal range of temperature is greatest; and its prevalence at that season of the year may be attributable to long-exposure to the extreme heat of summer and the consequent depression of the vital powers. Among other causes calculated to produce fever of an adynamic and malignant character are intensity of the malarial infection; a depraved condition of the blood; injudicious medical treatment; and the influence of predisposing causes such as insufficient food, intemperance and disease.

Malarial Cachexia.—The effects of chronic malarial poisoning are familiar to physicians residing in malarious districts. The striking features of this condition—the saffron-yellow skin, œdema of the extremities, shortness of breath and palpitation upon slight exertion; the excessively enlarged spleen, and the frequent hemorrhages—are indicative of grave constitutional disturbances, and symptoms threatening life are often present. I have a lady under treatment at the present time who has had several serious attacks of hematemesis, the last attack a few weeks ago nearly proving fatal. The case has a history of intense chronic malarial intoxication with splenic hyperplasia.

The anæmia so commonly observed following acute attacks

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of intermittent and remittent fevers, is less important but may lead to serious results if improperly or imperfectly treated. I was recently called to attend a child who for several weeks had been under homœopathic treatment for intermittent fever of the quotidian type, and who during that time had suffered a daily paroxysm. The little patient presented a profoundly anæmic appearance, with dark yellow skin, enlarged spleen, etc., all of which promptly disappeared under appropriate treatment.

Among other toxic effects of malaria are malarial hæmaturia and dysentery, paraplegia and certain painful neuralgic affections; the pernicious fevers with cerebral, gastric and enteric complications, but they are rarely observed in this latitude, and their consideration would occupy more time than has been assigned for the reading of this report.

Treatment.—While seldom any immediate injurious and serious results follow an attack of simple intermittent fever, even without treatment, much may be done during the febrile paroxysm not only to lessen discomfort but to guard against subsequent complications and sequelæ. It is, moreover, a common observation that these cases if not checked by prompt and appropriate treatment, may soon assume an irregular type and become merged into the continued or remittent form.

If the patient is seen at the beginning of the attack the physician's attention is first occupied in efforts to abort the chill; or, failing in that, in the employment of such measures as will tend to abridge the cold stage. A subcutaneous injection of an eighth or quarter of a grain of morphine with 1-60 of a grain of atropia is usually effective. Warm external applications also, by means of hot water rubber bottles to the back and extremities, have a tendency to lessen the duration of the rigor and to alleviate the distressing symptoms. The interior bodily heat being already increased, I never could see the utility of administering hot drinks as usually recommended. The value of chloroform internally and by inhalation in cutting short the paroxysms, has been favorably mentioned, but I have had no experience in its use for this purpose. The benefit derived from cold water used in the form of bath or douche, in this stage, has been insisted upon by many authors, but the procedure, it may be safe to say, is seldom employed except in comatose cases with high temperature and in the

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algid form of pernicious fever. A desire for alcoholic stimulants is often expressed at the commencement of a chill, but their use should be avoided, as they tend to increase gastric disturbances and their effect is injurious later on when reaction takes place.

As the hot stage advances much relief is experienced from sponging the body with cold water, the application of cold compresses over the temples, and, if the headache is severe, of the ice-cap to the head. During this stage I usually prescribe, and I think with much benefit, the following mixture:

℞ Morphinæ acetatis.....gr. j.
Tr. aconit.....mx.
Liquor ammonii acetatis.....ʒiv.

M. Sig.: Take a dessertspoonful every hour till fever subsides.

To this, if there are present distressing nervous symptoms, the addition of fifteen to twenty grains of potassium bromide to each dessertspoonful exerts a remarkably quieting and soothing influence.

With the beginning of the sweating stage the temperature rapidly falls, and the specific treatment should be at once commenced.

Long before correct theories of the pathology of malarial diseases were announced quinine was recognized as the remedy *par excellence* in these affections. Since the discovery of the plasmodium malariæ the action of quinine upon these organisms has been described by Plehn, Baccelli and others, and the anti-malarial properties of this wonderful remedy fully established. It is an infallible antidote to malarial poisoning. There has been much difference of opinion regarding the best time for the administration of quinine in the treatment of intermittent fever. Clinical observations have shown that the best results are obtained when it is given during the period of apyrexia, and the experiments of several careful investigators who have observed the destructive effect of quinine upon the plasmodium of Laveran, have demonstrated that the malarial parasites in different stages of development vary in their resistance to this drug, and that the period of their greatest sensibility is between the paroxysms. Its exhibition, therefore, during

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the period of febrile intermission is not only in accord with clinical observation but also with the theory of its therapeutic action. That the use of the cinchona alkaloids during pyrexia often produces unpleasant and even dangerous effects, as formerly taught, may be denied, but their influence in preventing a recurrence of the paroxysm when so taken is greatly diminished.

In uncomplicated cases the advent of the sweating stage is sufficient to indicate that the fever is subsiding, and the grains of quinine in solution or in capsules should be administered and the same quantity repeated once or twice during the following twelve or eighteen hours. This will invariably check the paroxysms, and a daily dose of fifteen to twenty grains repeated at intervals for the subsequent three or four days will prevent their return. Once the attack is broken, tonics are indicated to restore the patient's strength and improve the impoverished condition of the blood. For this purpose I have found satisfactory results from Fowler's solution of arsenic in combination with the ferrated elixir of calisaya—quinine to be resumed upon the first indication of febrile recurrence, and a full dose, fifteen to twenty grains, given every seventh day for several weeks to prevent relapses.

Since the cinchona alkaloids are now generally recognized as specific antidotes for malarial poison, the numerous substances which have from time to time been recommended as substitutes for quinine, in the treatment of paludal diseases, such as arsenic, eucalyptol, iodine, carbolic acid, salicin, etc., are seldom employed in acute attacks of malaria; for it cannot be said that there are any positive contra-indications to the rational use of this sovereign remedy. In persons of unusual nervous susceptibility, unpleasant effects may always be guarded against by careful attention to dosage and mode of administration.

A word in this connection concerning the alleged oxytocic properties of quinine. I was recently called to see a lady four and one-half months pregnant, and suffering from malarial remittent fever, in consultation with a very intelligent physician who had unsuccessfully endeavored to control the fever without resorting to quinine, fearing that its use might induce uterine contractions. Having frequently employed it under similar

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conditions with uniform favorable results, with the consent of the attending physician fifteen grains of the hydro-chlorate of quinine were administered by hypodermic injection during the first remission, and ten to fifteen grains daily at intervals during the following three days. A prompt and safe recovery ensued. When we bear in mind how often abortion and miscarriages are caused by malarial diseases we should not hesitate, in the presence of the toxic effect of paludism, to administer quinine in any stage of pregnancy, and I believe that in many instances these accidents are prevented by prompt and efficient doses of this agent.

At the outset of an attack of malarial fever a mild purgative is often required, as constipation is usually present and the alvine secretions more or less vitiated. The exhibition of a cathartic, however, should in no manner interfere with the specific treatment. Any preparatory treatment, so called, is not necessary, and when a laxative is indicated a seidlitz powder, a dose of Rochelle salts or solution of citrate of magnesia answers every purpose, while if a spontaneous evacuation takes place every day or two I believe the bowels better be left undisturbed. I am aware that it is still the custom of many physicians practicing in malarious districts to prescribe calomel and blue pill in the treatment of periodic fevers; but I believe they are usually unnecessary and often positively injurious; that patients do equally well, if not better, when mercurials are wholly avoided, and, as Dr. Morehead said many years ago, that the "induction of mercurial influences in the treatment of malarious fever has been a great and grievous error in therapeutics." In exceptional cases, when there is much gastric disturbance and the vomiting severe, small doses of calomel and ipecac, followed by a saline draught, are sometimes useful, but otherwise they are not essential and should not be prescribed.

The treatment of other forms of malarial diseases does not differ materially from that of the intermittent type. Simple remittent fever yields promptly to quinine given in efficient doses either in capsules or by hypodermic injection during the remission. Persistent vomiting should be relieved by counter irritation over the stomach, milk in small quantities with carbonated water or lime water, and, if severe, by subcutaneous

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injection of morphine and atropia. The remissions may often be hastened, headache and delirium relieved and high temperature reduced by cold sponging, tincture of aconite given in small frequently repeated doses, and phenacetin, five to ten grains every two or three hours.

If adynamic symptoms supervene, in addition to specific treatment, special attention should be devoted to supporting the patient's strength, and to this end analeptics and stimulants are important and necessary adjuncts.

In malarial cachexia and anæmia, once the paroxysms are checked, treatment should be directed to complications, particularly such as disturb the functions of the organs of digestion. Chronic or subacute inflammation of the stomach and liver, often present, calls for appropriate medication. Iron, arsenic, strychnine, and, in small doses, bichloride of mercury are the most efficient and reliable medicinal agents, and a change of climate, either to the seaside or to some suitable mountain resort, is always beneficial and a valuable adjuvant in the restoration of health.

The therapeutic sensation of the year has been the prominence which bacterio-therapy has attained, and its employment in diphtheria and other diseases. The introduction of animal extracts prepared from different organs and tissues, is also a prominent feature in modern therapeutics; and while I would not say that their use as curative agencies is analogous to an attempt, as Dr. Butler, of Chicago, remarked in a recent address, "to increase the weight and fibre of a tree by manuring it with sawdust," yet it cannot be said that their efficacy has been determined. Very recently the exhibition of certain organic products has been highly commended in the treatment of malarial anæmia and other anæmic conditions; and among the novelties in this line which the past year has produced are bone-marrow, hæmalbumin, hæmol and ferratin. All of these substances, it is claimed, are efficient blood foods and nutritive tonics of exceptional merit; but whether they will prove a valuable addition to our therapeutic armamentarium remains to be seen.

In no branch of the medical science has there been more commendable progress, of late years, than in the art of therapeutics; and while conservatism should always temper the

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enthusiasm which the discovery of new remedies inspires, their employment should neither be condemned without investigation nor accepted without proof of their utility founded upon sound logical deductions, and established by the test of clinical experience. Meanwhile, "*in medio tutissimus ibis.*"

DISCUSSION.

DR. W. WATT KERR, of San Francisco, in opening the discussion, said: I fully agree with Dr. Powell when he contradicts the statement made in a recent work upon the practice of medicine that malaria or malarial diseases are rare upon the Pacific Coast. Some of us see enough malaria every day to contradict this. Malarial diseases are not confined to the San Joaquin and Sacramento valleys, but they exist in abundance in San Francisco. A short time ago there appeared in one of our local papers a statement made by two or three different physicians that malarial diseases were non-existent in San Francisco, because we had no marshy soils; that we were free from those conditions that appertained to the San Joaquin valley. One of the great difficulties in discovering the true cause of malaria, I think, lies in the fact that the profession has been too liable to look for this disease simply in marshy soils and in brackish water, whereas we know that it exists in soils such as in Hongkong, which are entirely of granite formation, perfectly free from any marshy conditions; that it exists in the plateaus of Castile, and in the Himalayas. In San Francisco we not only have the remittent and intermittent fevers, but we have them of a very virulent type. This year we received at the hospital quite a number of cases from a grading camp at a place where there used to be some Italian gardens. Those cases were all remittent, without any of the symptoms of typhoid fever, and yet they were most persistent and intractable. They finally yielded to the quinine treatment, the quinine having to be given in solution and given in large doses every two or three hours. In regard to the cause of the disease, I think that water can be looked upon as only one vehicle for introduction, the same as sewer gas in enteric fever. People contract the disease who are by no means addicted to the habit of drinking water. However, I agree with Dr. Powell that the water is more liable to be contaminated

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than anything else. In those remittent and intermittent fevers the circulation, especially in the liver, is liable to be very sluggish, and we know that alkaloids when retained too long are destroyed, and you do not get the benefit of the quinine unless the circulation is kept going rapidly through the liver. If it is detained there too long you fail to get the effect. In the same way we know that unless there is an abundance of bile in the intestines to dissolve the quinine it will form an insoluble salt, which is only soluble in excess, and there again you will not get absorption. I therefore recommend that wherever you have a marked congestion of the liver a mercurial be given occasionally to relieve the congestion, and at the same time to produce a full and ready flow of bile into the intestines. If we find absorption of the quinine going along perfectly well there is no necessity for the mercurial. We should not make up our minds to always give mercury, or to always not give it, but to use a little common sense and see whether each individual patient demands the use of mercury or not.

DR. G. W. DAVIS, of San Francisco: I am somewhat in harmony with both Dr. Kerr and the author of the paper. My opinion as to malarial fever some few years ago was that it was in part due to the contamination of the air, and also of the water. I remember a family living in the Sacramento valley, not far from Chico, who were in the habit of using cold tea, or tea generally, and they escaped more than their neighbors from malaria. I supposed at that time that the disease was largely due to the water which was being used in the low swampy place, and I was glad to hear Dr. Powell express the opinion that water often causes it, because if that be so we could more readily get rid of it and improve the sanitary condition of the communities where it prevailed. In regard to the treatment of chronic malarial trouble, mercurials are certainly indicated in the majority of cases, and quinine, but I also want to emphasize the remedy of arsenic in some of its forms. I think it is invaluable in those cases, and particularly where there is a great deal of anemia. I also want to emphasize what Dr. Kerr has said in regard to its prevalence in San Francisco. I think if there is any disease which you can diagnose to a certainty it is malarial fever and its complications. I do not believe in

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large doses of quinine. Formerly, while living in cities above the one where our worthy President resides, I gave very large doses of quinine, and it was a mistake. I believe in much smaller doses now, and more frequently repeated, than I did then, and I think we have less nervous manifestation that results from the large doses of quinine that have been formerly given.

Dr. R. G. Reynolds, of Upper Lake: I was very much pleased that Dr. Powell's condemnation of the use of mercury was not allowed to go unanswered, because I was in hopes that it would bring out the views of the Society fully, whether we could safely omit the use of mercury. I used to live in a malarial country myself, and I remember distinctly that I have time and again tried not to give mercury, but simply to break up the intermittent fever with quinine alone, and frequently I failed. I would give what I would consider the specific amount of quinine, which would be sufficient to break the paroxysms, and yet they would return without the slightest interruption. I don't think I ever failed where I had preceded the quinine by giving sufficient mercury to arouse the liver, and then the quinine seemed to act invariably positively, and break up the intermittent fever. I can hardly agree with Dr. Davis that small doses will accomplish the object in quinine. I am rather a stickler for small doses in many things, but I never could break up an intermittent fever in a robust adult with less than twenty grains of quinine given between intermissions, either in small doses very frequently until that amount was given, or else in one, two, or three doses.

Dr. C. G. Kuhlman, of San Francisco: There are two points that I want to dwell on—quinine and tea-drinking. General Gordon, of the British Army, in China, has furnished us some very valuable reports in regard not only to the condition of medicine and the various sciences in China, but also in regard to diseases there. According to his reports malaria is very prevalent in the valleys and along the river banks of the large rivers of China; which does not show that tea-drinking is a preventive, or that water is the principal carrier of the contagion. There is nothing to show that malaria is due to a specific micro-organism, or that it is an infection disease within the meaning of that term, as all the symptoms refer to the

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nervous system, with perhaps functional disturbances of the liver and brain. As a rule malaria is contracted at night, when vapor ascends from the marshes, but it is not confined to marshes. Malaria may be contracted in any portion of the world, as Dr. Kerr says, no matter what the altitude may be. I think that malaria is due to carbonic acid poisoning. All the symptoms are those of carbonic acid poisoning in animals, as has been demonstrated by various chemical experiments, and the chemical analysis of the vapor that hangs over miasmatic or so-called malarial districts, is shown to contain a large percentage of carbonic acid, which we know is a deadly poison. I think that malaria is due to a direct poisoning of the histological elements of the organism by carbonic acid poison, whereby the physiological resistance of the histological elements are lowered. Now if this be true, which I believe it is, then we certainly are wrong in treating those diseases with alkaloids, because they are powerful depressors of nervous tissue, and we certainly are pursuing a wrong therapeutic method when we produce further depression. Our treatment should be that of stimulation, with special reference to the nervous system.

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MEDICAL MEN AND "MEDICINE MEN."

By E. J. OVEREND, M. D., Oakland.

In view of the fact that there is a certain lack of respect and sympathy for medical men on the part of the public in general, it might not be wholly improper to inquire into the causes for this state of affairs.

I take it that there are few of us who believe that the profession enjoys the favorable glances of the public eye. If there are any such, I will remind them that the doctor is susceptible of, and vulnerable to, suits for malpractice; that he almost invariably figures disadvantageously in such suits; that attorneys, juries and the general public are commonly or largely arrayed against the defendant; that public sympathy commonly leans to the plaintiff in such suits; that the doctor, when subpœnaed as an expert witness in courts of law, is commonly looked upon as game, to be worried by glib attorneys, who find especial delight in "spitting" him from their vantage ground; that the laity generally, and the ignorami especially, are prone to attribute the death of a patient to the doctor's inattention or incompetence rather than to uncontrollable causes; and, finally, that the newspaper paragrapher and humorist finds a perennial outlet for his wit in lampooning the profession. It is true one seldom or never reads a new joke on the doctor—these witticisms come to us hoary with age, moss covered and moldy with a nativity in prehistoric time, yet the fact that they can still provoke a smile shows how the public enjoys a shaft directed at the doctor.

As a further indication of this general tendency to regard the doctor as a legitimate target for the shafts of ridicule, it may be observed that writers of fiction are prone to paint their fictitious doctors in disparaging colors. There must be a cause or causes for this state of affairs. There is certainly nothing humorous about sickness, pain or death; so the laugh, if it have a *raison d'etre*, must be on the fellow who ministers to the sufferers.

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In the relationship existing between the physician and the patient it would seem that we can still discern a part of the unwarranted assumption on the part of the former, and some of the foolish credulity on the part of the latter, that existed in former ages, when medicine was allied to religion, with priest-physicians the practitioners of both. In those days science was cultivated with little ardor except among a select few, for superstition furnished an abundant armamentarium:

To what extent is the medical man of to-day a "medicine man"? How much of his reputation among the credulous portion of the laity depends upon the tacit assumption of a power that he has not?

It is tacit assumption when he takes no pains to dispel the belief in his supposed omniscience in science and omnipotence over disease. Of course, the invariable temptation is to take advantage of the faith or credulity of the patient and thus make available the power of suggestion as an adjuvant to therapeutic measures. As a general rule better results are obtained; but it is a question whether this course redounds ultimately to the good repute of medicine. This, I take it, creates a suspicion of charlatanry and causes the distrust of that portion of the laity not overburdened with credulity.

The difficulty, and sometimes impossibility, of accurate diagnosis in the prodromatous or incubating stages of diseases, and the difficulty or impossibility of accurate prognosis has led the profession to cultivate the art of satisfying patients with ponderous platitudes, stereotyped verbal formulæ, oracular phrases full of import to the ear, but meaningless to the mind.

In order to maintain his character as priest of the occult, he must be ready to answer all questions relating to the past, present and future of the diseases of his patients. He feels called upon to give information that he does not possess. As other doctors do it, he must do it, or be ranked as inferior. If he be truthful and state the limitations of his science, affirm only that which science warrants him in affirming and decline to go further, he fears a loss of confidence in the patient, a loss of practice and of fees. The fact that his medical neighbor is a man who has the art of the Delphian Oracle,—vulgarly called "hedging,"—stimulates him to the exhibition of a like power.

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This practice of tergiversation is to the unlearned a *quasi* proof of the possession of the divine power of healing. It is odious; it is an offense to science; and regular medical men the world over should combine against the practice of such petty arts. There is an odor of the "seventh son of the seventh son" about the doctor yet. It is a shame that the slimy hand of superstition should still rest upon any part of the grand structure of medicine.

Out of this mire made by the credulity and superstition of the laity and the weakness of doctors, there is a way; it consists in educating the public up to a decent understanding of the limitations of medical science; it consists in firmly telling patients what we do *not* know, as well as what we know. They should be taught to know that medicine is made up of a number of sciences more or less exact, but the least exact of all is therapeutics,—the very one they judge the whole by. They should be taught that drugs never give health, and that they never represent the largest factor in the force that averts or postpones death; that drugs are useful when intelligently used, and are harmful when used without scientific discrimination; but, in either case, their effect is commonly and grossly exaggerated.

There is no need to fear that an intelligent public will exhibit any loss of respect for the profession of medicine when it shall have shed the last scales of the snake-skin of superstition. On the contrary, when it shall appear entirely rehabilitated in the snowy robes of science, it will be accorded a higher dignity. When the day arrives that a patient will be satisfied with the scientific regimen laid down by a physician and not look for a "bottle of bitterness" as an indispensable adjunct, a new era will have begun.

In practical therapy to-day, how many are there who give adequate attention to the natural forces which obtain to produce health or combat disease? Does any one neglect drugs? Drug mania is at present a disease in the profession, constituting another reason why the average doctor is in some danger of being called a "medicine man." The surgeons, as a rule, are beyond the danger of this charge; but in avoiding Scylla they are drawn into Charybdis—they are open to the objection that they are afflicted with the *pruritis secandi.*

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The profession itself is too credulous, as is shown by the greedy manner that it takes up and cons the literature of the manufacturing pharmacists and pours the products of these avaricious capitalists down the throats of drug-thirsty patients. It is true that many preparations of value are supplied the market by the manufacturers; but it is equally true that a majority of preparations, proprietary and other, are worthless; and their hybrid names are an added offense. It it apparent that it is not alone the laity that stand in need of a robuster skepticism; the profession also needs it, for it is imposed upon not only by manufacturing pharmacists, but often by prominent members of its own craft, who advocate, with persuasive pens, novel but worthless methods and measures. The "personal equation" should not be lost sight of.

There is another attribute too frequently observed in the modern doctor which suggests the "medicine man,"—and this relates to his garb and equipage.

It should be unnecessary to remark that nothing in this paper is intended to refer to the quack or irregular. It is a sad fact that the regular too often avails himself of the contemptible aids to the charlatan by adopting certain peculiarities of costume and of equipage. It is a sadder fact that the men most prone to the exhibition of this weakness are in high professional places,—just the ones who could best afford to dispense with artifice and "claptrap,"—just the men who are under the highest obligation to pursue the straight and narrow path of science and of sense,—just the men who should set an example to their younger and less fortunate brethren.

For nearly a generation the ranks of the regular profession have been rid of the long haired members. Let us hope that before another generation the horse jockey and the politician will have left for his proper field. Let us hope that the fellow who drives about in a barouche *à la* "King of Pain" will have gone also. Let us hope that the doctor with the dog under his carriage and the doctor with the barking canine by his side on his carriage seat will journey with the doctor who hypnotizes his patients by flashing his big diamonds upon them, and all travel to that bourne where the "wicked cease from troubling and the weary are at rest."

From these and all other "medicine men," Oh Lord, deliver us!

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THE STATUS PRESENS OF INHERITED TUBERCULOSIS.

By CHAS. G. KUHLMAN, Phg. M. D., San Francisco.

No pathological condition has received so much attention from scientific men as that retrograde tissue metamorphosis represented by the misleading and arbitrary term "Tuberculosis"—and for the following reasons: (1) Not only does the process manifest itself in all races of men—smiting alike mighty rulers and lowly slaves—but it also manifests itself in domestic animals, furnishing food and toiling for mankind. (2) Notwithstanding the pretense, the therapeutic and surgical methods under the guidance of the world's most scientific men have failed to cure, retard or even impress this most formidable retrograde process. The U. S. census of 1890 contains certain statistics appertaining to tuberculosis, which, although they cannot be accepted as reliable—having been collected mostly by unprofessional political favorites, who no doubt dotted down every case attended with a cough as one of consumption—have furnished the text to quite a number of papers, recently read before the various State and National Sanitary and Medical Societies in this country, and have inaugurated a mode among medical men apparently having for its object "State and national" control of all organic forms and their physiological products infected with tuberculosis. Inspection of domestic animals and their physiological products used by mankind for food has prevailed among all other civilized nations for ages, so there must be some serious defect in the fundamental laws of this nation if it has existed for over a century deprived of the protection afforded by such system.

I have carefully read all the papers published upon the subject of tuberculosis in this country up to the present date, and also the opinions of leading medical men in various sections, from which I feel justified in saying, that in no instance have the arguments thus far advanced in support of the general assertions that tuberculosis is contagious, infectious and dangerous

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to the public health, been based upon such reliable scientific data as would render them of any scientific value or of any weight whatsoever in inducing our legislators to abrogate any of the constitutional rights now enjoyed by those unfortunate human beings who are afflicted with this most terrible disease.

This paper will present in a compact form, and I believe for the first time in the medical history of this country, all the world's reliable scientific data upon this subject, and point out as it has never been pointed out before, the "modus operandi" by which this retrograde tissue metamorphosis, which is neither endemic, epidemic or infectious, in the generally accepted sense of these terms, is disseminating itself among the human race through a defective social system, the natural outcome of ignorance and criminal carelessness.

It will point out the exact nature of the laws required to limit if not eradicate this serious affection which now causes a large per cent of all deaths—so that we may not become *particeps criminis* with our legislators through ignorance in depriving a large portion of humanity of liberty and happiness by enacting laws prescribing complete isolation when such laws are not warranted in the present light of science.

HISTORY OF INHERITED TUBERCULOSIS.

Although the infectious nature of tuberculosis, as demonstrated by Villenien and confirmed by others, is hardly doubted by any who has followed the details in its history—still the opinion that tuberculosis is inheritable which was, until a few years ago, one of the established "dogmas" of medicine has been seriously doubted by some and entirely denied by others, the opinion being that cases seemingly inherited could be more easily explained by infection—family infection, as it were.

That the disease in animals could be acquired in utero was not denied owing to Johnes' repeated demonstrations of inherited tuberculosis in calves, but it was held that this method of infection was of very rare occurrence in animals, and that it never occurred in connection with human beings. It is worthy of notice, however, that a few investigators, such as Baumgarten, have always held that the disease could

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be acquired in utero in human beings as well as in the lower animals.

Inherited tuberculosis in calves has been observed for a long time by Chadau, but the first described case is accredited to Johne, of Dresden. (*Deutsch z. f. Their Med., 1884.*) Two other cases are reported by Maldoz and Brouvier. (*Anales de L'Institute Pasteur*, 1889.) One by Fadyan. (*Journal Comparative Pathology*, Edinburg, June, 1891.) And one by Ccoker, of Vienna. (*Recinal de Med. Vétér. et Congress de la Tuberculose*, 1891.)

The latest and most interesting scientific data appertaining to this subject appeared during the month of February, 1893, in the form of two works, one by Bang, Professor of Veterinary Surgery in the Agricultural High School of Copenhagen, and one by Prof. Gartner, of Jena, Germany. Bang's work (*Medfödt Tuberculose has Kalve Maanedskrift for Dyrloger 4 Bind, 2 Hefte, Kjöbenhaven, 1893*) describes seven cases of inherited tuberculosis in calves occurring in connection with his own practice. A careful macro- and microscopical examination of these seven cases of undoubted inherited tuberculosis demonstrated certain almost constant occurring typical conditions in so far as organic dissemination is concerned, and inasmuch as it is but natural to suppose that inherited tuberculosis in human beings manifests itself in the same manner, and inasmuch as the peculiar uniformity of organic disseminations has not been clearly pointed out before we will reproduce Prof. Bang's language *verbatim*, which is as follows: When we compare these seven cases of undoubted inherited tuberculosis we have a pretty typical picture before us. The liver, and especially its lymphatic tissues, are first affected, then the mediastinal and bronchial glands, and, in some cases, a limited deposit in the lungs, and also, but rarely, in other organs. It is quite natural, he says, that we meet with this typical picture in inherited tuberculosis when we consider the anatomical relations existing between the organs affected and the placenta, the source of infection.

The materies morbus is introduced into the fœtus through the umbilical vein which carries a large amount of blood to the liver direct—here it may stop and give rise to tubercle, or it may, as often, happen to be carried on to the lymphatic glands

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without losing any perceptible changes at the point of invasion.

Deposits in the lungs may be caused in one of the following ways: (1) By direct introduction of the materies morbus into the vena cava through the ductus venosus. (2) Metastatically from a primary focus.

Prof. Bang also asserts: That there can be but little doubt as to the intra-uterine origin of tuberculosis in older calves whenever they present the same typical picture of dissemination.

Prof. Gartner's work (*Uber die Erbbickeit der Tuberculose. Zeitschr. f. Hyg. Inad. Infection Krankheit, 13 Bd. 2 H. Feb. 1893*) contains 150 large pages, and is so carefully prepared that it seems almost proof against the most severe adverse attacks of criticism. His experiments cover a period of three years—and are exceedingly interesting and valuable owing to the fact that they have most firmly convinced him of "that which he set out to disprove—namely the inheritability of tuberculosis."

Gartner's experiments may be divided into four series or groups based upon the material employed and the results sought to be obtained as follows: (1) Transferability of caseous phthisis from mother to fœtus in utero. (2) Transferability of miliary tuberculosis from mother to fœtus in utero. (3) Transferability of chronic lung tuberculosis (fibroid phthisis) from mother to fœtus in utero. (4) Transferability of tuberculosis from father to fœtus in utero through semen.

The animals used in these experiments were white mice, canary birds, guinea pigs and rabbits, all of which are very susceptible to tuberculous infection. The modus operandi was as follows: White mice and canary birds received intraperitoneal injections of the material found in the above mentioned forms of tuberculosis, causing abdominal tuberculosis —after which the animals were allowed to conceive—and the eggs and young properly prepared were injected into the rabbits and guinea pigs intra-peritoneal, causing death to a certain number in a certain time from tuberculosis. Peritoneal injections of semen from tuberculous males transferred the disease to the females, but there was nothing to show that the

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disease could be transferred to fœtus in utero that way. These experiments, Gartner claims, prove positively that tuberculosis can be transferred from parents to fœtus in utero, at least in so far as the mother is concerned.

Having said this much for the lower animals, we will now proceed to consider the various cases of inherited tuberculosis observed in connection with human beings, and will in order to avoid confusion divide them into two series as follows: (1) Those cases in which tubercular changes have been demonstrated macroscopically. (2) Those cases in which inherited tuberculosis has been demonstrated microscopically and by inoculative experiments, where macroscopic changes were absent.

The oldest well authenticated case is that reported by Charrin. (*Lyon Medicale, 1873.*) A woman suffering from acute miliary tuberculosis gave birth to an eight months child, which, dying three days after birth, presented the following post mortem changes: Extensive deposits of miliary tubercle in the liver and spleen; tubercle in the peritoneum, supra-renal capsules, left kidney and lung; caseous degeneration of the mesenteric glands, and a tubercle the size of a lentil upon the right frontal lobe of the brain. The mother died ten days after the birth of the child.

Merkel of Nürenberg (*Zeitschr. f. Klin. Med., S. 559, 1884*), describes a case as follows: A child whose mother died two days after delivery from acute miliary tuberculosis, presented at the time of birth a tubercle the size of a pea upon the fauces. The child died atrophic, and upon section presented the following macroscopic changes: Caseous process in connection with the os hyoides; caseous glands in the neck and a caseous focus behind the left hip joint.

Berti saw two small cavities filled with caseous matter situated near the lower posterior margin of the right lung in a child dying nine days after delivery, whose mother was tuberculous.

Jacobi (New York, 1891,) found miliary tubercle in the liver, spleen and right pleura of a still-born premature child whose mother died three weeks later from acute miliary tuberculosis.

Sabouraud (*Societé de Biologie, 17 Oct., 1891*) observed ex-

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tensive deposits of miliary and large tubercle in the liver and spleen of a child born at term and dying eleven days after birth. Some of the tubercles found in the spleen measured one centimeter in diameter. The mother died two months later from miliary tuberculosis.

Baumgarten has observed a caseous focus in the tonsil of a still-born child.

Rindfleish stated at a meeting of the Bremen Society of Natural Philosophy, that he had seen an eight months child "*furch und durch tuberculös*"—"through and through tuberculous."

The above constitute all the authentic cases of inherited tuberculosis presenting macroscopic changes, and although the existence of macroscopic changes at birth may be regarded as of rare occurrence—still the above cases, especially those of Charrin, Jacobi and Sabouraud, which admit of no doubt, must be accepted as evidence of the fact that a mother may give birth to a child presenting macroscopic tuberculous changes at the time of birth. The tuberculous changes found in these cases are identical with those found by Prof. Bang in calves, in so far as organic dissemination is concerned.

We now come to the second series of cases in which inherited tuberculosis has been demonstrated microscopically and by inoculative experiments, cases in which macroscopic changes were absent.

The case published by Birch, Thirschfeld and Smorl (*Zeiglers Bietrage, Bd. IX., S. 428*) furnished the most beautiful and most reliable illustration of the fact. A seven months fœtus was removed by Cæsarean section from a woman who died from acute miliary tuberculosis. The placenta contained no tubercle—the epithelium was missing in one place. No tubercle was found in the fœtus, but inoculation experiments on animals gave positive results.

Similar cases are reported by Armanni, of Naples. (*International Kongres, 5 Bd., Absh. 15, S.* 52.) And by Aviraguet. (*De la Tuberculose chez les Infants. Union Medical, 1892.*)

Londansy and Martin have also reported a case. (*Revue de Medical*, 1883.)

Londe and Theircelin have produced tuberculosis in guinea pigs by inoculations with blood taken from the umbilical vein

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of a fourteen days premature child born of a phthisical mother and dying three days after birth.

These cases show almost conclusively that tuberculosis may be transferred from mother to fœtus in utero ad placentam, and that owing to the great physiological resistance of the tissues during fœtal life the contagium does not always find favorable conditions for its peculiar physiological or chemical activity until later on when the physiological resistance of the organism has been lowered by the same course.

Finally, macroscopic tubercle has been found in the human placenta. Lehmann, of Berlin (*Uber eincen fall von tuberculose der placenta, D. M. W., Marls, 2nd, 1893*), found numerous miliary tubercles both upon the natural and fœtal surface of the placenta of a woman 26 years of age who died during the eighth month of pregnancy from acute miliary tuberculosis.

Inoculation experiments gave negative results though the microscope demonstrated numerous bacilli.

ETIOLOGY OF TUBERCULOSIS.

Nearly a decade has passed since Villenien demonstrated the infectiousness of tuberculosis by a series of crude inoculation experiments on animals, and it is now thirteen years since Koch so boldly announced to the world that tuberculosis was caused by a certain "rod-bacteria," the so-called "bacillus of tuberculosis."

This announcement inaugurated quite an epidemic of bacteriological research, and within a comparative short time quite an extensive literature appeared upon the subject, coming from the pen of so-called bacteriologists who mostly supported Koch's theory; but inasmuch as the opinion of these writers was based upon experiments conducted in laboratories with the dead tissues of organic forms said to have died from tuberculosis—and inasmuch as the majority of these writers had never been actually engaged in the practice of medicine—old experienced clinicians who could neither be blinded by the microscope nor by Koch's reputation, who had studied tuberculosis at the bedside in all its phases from the cradle to the grave and beyond the grave, both in private and hospital practice, remained conservative over a "theory" which conflicted with centuries of most carefully recorded observations—and

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they commenced a series of most carefully conducted clinical experiments which also gave rise to an extensive literature upon the subject.

All of this literature may be arranged under two headings as follows: (1) Laboratoro-bacteriological; (2) Clinico-bacteriological; and may be said to have a common aim, namely, identification or demonstration of the so-called bacillus tuberculosis in all cases of clinical tuberculosis.

Koch's description of the bacillus of tuberculosis—which by the way is descriptive of half a dozen different forms—is as follows: (1) Thin rods from two to eight micro-millimeters in length, straight or curved, frequently beaded—single, in pairs or in bundles. They are found in the tissues in the interior of giant and between epithelial cells. They are non-motile and consequently possess no power of locomotion and can not penetrate into the tissues without assistance. Spore-formation occurs even within the animal body—the spores having the appearance of clear vacuoles. (2) Pure cultures can be obtained outside of the body on different nutrient media, such as potatoes, beef-broth, blood serum, etc., and the bacilli liquify culture media, and do also decompose solutions of peptone and lactose. (3) The bacilli are indole-producing. (Indole $C_8 H_7 N$. or $C_6 H_4 \begin{matrix} CH \\ NH \end{matrix} = CH$. (4) The bacilli stain readily in aniline dyes. (5) Pure cultures can be obtained from the tissues, expectorations, excretions and physiological secretions of all tuberculous organic forms. (6) Inoculations of the tissues, expectorations, excretions and physiological secretions of tuberculous organic forms produce typical tuberculosis. (7) That tuberculosis is acquired and not inherited.

To say the least, Koch's theory regarding the microbic origin of tuberculosis must, in order to be considered tenable, be borne out by a preponderance of scientific evidence, especially clinico-bacteriological. We have already knocked two of its strongest props from under: (1) That the description of the physical characteristics of the bacillus is vague and may apply to several different forms. (2) That tuberculosis is not inherited. Nor can it be said that there exists a single scientific datum either laboratoro-bacteriological or clinico-bacteriological, which corroborates Koch's theory in any material particular, as will be seen from the following:

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(1) None of those bacteriologists who have supported Koch's theory have furnished an independent description of the bacillus of tuberculosis—they simply refer to Koch's description—and all independent references to the physical characteristics and physiological activities of this supposed bacillus is such as to make it utterly impossible to identify the brute. (*Senn's Bacteriology, Rindfleish's Elements of Pathology;* Kitasato, Nocard, Roux, Schlegtendal, Weichselbaum, Schinehardt, Krause and numerous others).

(2) Micro-organisms answering Koch's description in every particular have been observed in connection with the cavitas natura of healthy human beings and animals susceptible to tuberculous infection without giving rise to tuberculosis.

(3) Micro-organisms answering Koch's descriptions have been found in less than 50 per cent of clinical tuberculosis and then never alone, always together with staphylococci, streptococci, pneumococci, bactcoli communis and various other forms.

(4) Propagation of micro-organisms answering Koch's description outside of organic forms on so-called culture media from the sputum, excretions or physiological secretions of tuberculous human beings, has never been accomplished, even though such material proved infectious in guinea pigs by inoculation, and contained rods answering such description. (Kitasato, Malm, etc.)

(5) Large and miliary tubercles and caseation occur in connection with retrograde tissue changes not regarded clinically as tuberculosis such as syphilis, leprosy, actinomycosis, lupus, scrofula and so-called "Farein du bœuf" in cattle and cancer. (Virchow, Rindfleish.)

(6) Micro-organisms found in connection with retrograde tissue changes in the lower animals occurring naturally, or artificially induced by inoculations of the tissues. Expectorations, excretions and physiological secretions of tuberculous human beings or other organic forms differ radically from Koch's description. (Hauseman, Kitasato, Roux, Holst, Malm, Baumgarten, Nocarde, Brouvier.)

(7) The bactcoli communis and other intestinal decomposition forms invade the blood and parenchymatous organs a few hours after death and under certain conditions before death, rendering post mortem bacteriological experiments

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valueless. (Neelsen-Johne, Gartner, Gaffky, Paak, Van Ermengen, Peter F. Holst, Roux.)

(8) Polymorphism of bactcoli communis and other infection and decomposition micro-organisms has relegated the entire subject of bacteriology into obscurity if not oblivion. (Roux, Escherich, Frankie, Favel, Van Ermengen, Kitasato, Dunbar, P. F. Holst, Stocklin, Rodet, Remy, Sugg, Germano, Manrea, Malvoz, Bufraid, Reté, Lesage, Macaigne, and Charin.)

(9) Microscopically we can not differentiate between the pathological products of tuberculosis, syphilis, leprosy, lupus, cancer and scrofula.

(10) All therapeutic methods, such as Koch's "Tuberculine," based upon the assumption that tuberculosis is due to a specific microbe, have proved failures, if not "fakes."

Clinically, tuberculosis has been regarded as an inherited disease by the most scientific men in all ages. The waxy child of gelatinous parents has ever been regarded as a tuberculous offspring,—a transmission to fœtus in utero of the anatomical and physiological peculiarities of tuberculous parents, as it were.

Clinically, a healthy woman twice married may give birth to a tuberculous and a non-tuberculous set of children if one husband be tuberculous. Colored tuberculous children propagated by a tuberculous colored male and a healthy white female have been observed several times, showing that tuberculosis is transferred from father to fœtus in utero.

Having thus shown that tuberculosis is transferred from tuberculous parents to fœtus in utero, and that there exists no reliable scientific data corroborative of Koch's theory that tuberculosis is due to a specific microbe, we will proceed to consider the next part of our subject, namely:

INFECTIOUSNESS OF TUBERCULOSIS.

As has already been said the term tuberculosis is misleading and arbitrary because other retrograde processes whose clinical history, symptomatology, course, duration and response to therapeutic methods differ vastly from so-called consumption —present tuberculosis and granulation necrosis post mortem, which cannot be distinguished from one another, microscopically or otherwise.

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Bacteriological experiments have demonstrated two things, which, by the way, have been assumed for centuries: (1) That subcutaneous, intraperitoneal and intravenous introduction of the tissues, expectorations, excretions and physiological products of tuberculous organic forms may give rise to tuberculosis or consumption at the point of inoculation or metastatically at points distant from the point of inoculation. (2) That the tissues, expectorations, excretions and physiological products of tuberculous organic forms contain a toxic compound or compounds (chemical nature unknown) which rapidly lose their virulence by exposure to the direct rays of the sun and ozone of the air,—a highly organized unstable deoxidizing compound or compounds, as it were.

However, thousands of inoculation experiments on animals and birds regarded as very susceptible to tuberculous infection with material obtained from typical clinical tuberculosis have given negative results—and the following clinical data also tend to deny the infectious nature of tuberculosis as accepted in the general sense of the term: (1) Infection of female by semen or by fœtus in utero has never been demonstrated. (2) Infection by kissing or ingestion of food, water or air has never been demonstrated. (3) Acquired tuberculosis in domestic animals regarded as very susceptible to the disease, such as mice, canary birds, rabbits, cows and guinea pigs, has never been observed, no matter how long or how close they have been in contact with tuberculous human beings. (4) Infection through suppurating wounds has never been demonstrated. (5) Koch's virulent bacillus has been found in the oral cavities of perfectly healthy human beings and animals so susceptible to tuberculous infection without causing tuberculosis.

In other words, tuberculous infection through suppurating wounds or per *cavitas natura* has never been demonstrated, and we are justified in assuming from the foregoing data that tuberculosis is not infectious in the general sense of that term.

SANITATION VERSUS TUBERCULOSIS.

Legislative measures tempered by rational judgment having for their object eradication of dangerous diseases prevailing in a nation, must, from the value placed upon life, of necessity be oppressive, and especially when they are the outcome of

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the unanimous demand of so learned a profession as that of medicine, which stands in direct and intimate relation to every family in the land. Hence, we cannot be too cautious in recommending measures of this kind at our annual conventions, because unless such recommendations be based upon reliable scientific data which carry conviction to the minds of intelligent laymen, we not only lower the dignity of the profession and lose respect, but if laws of that kind should be enacted they may cause unwarranted oppression and future regret and humiliation not only to their rash promoters but to their followers.

From what has been said regarding the etiology and infectiousness of tuberculosis it must be plain that this retrograde tissue metamorphosis is neither endemic, epidemic, contagious or infectious in the generally accepted sense of these terms, and that we are not justified in depriving those afflicted with this terrible malady of all their constitutional rights by prescribing complete isolation. All that we are justified in doing in the present light of science is to prevent consumptives from propagating their kind, and compel cremation of the expectorations, excretions, physiological products and dead tissues of tuberculous organic forms, as a precautionary measure against putrescent contamination of food, water and air, which may, if accidentally introduced into the alimentary canal and air-passages of healthy organic forms, give rise to toxic disturbances, if not consumption.

I will conclude this subject by saying that while there exist no reliable scientific data which will justify us in assuming that so-called infectious diseases are caused by specific pathogenic micro-organisms, still it cannot be gainsaid that human beings and the lower animals are infested with various microbic organic parasites, such as the bacterium coli communis, capable of accommodating themselves to the various changes that human beings and the lower animals undergo during life and death.

The following constitute some of the most important changes that have been observed in connection with these parasites: (1) They may change from epithytic or epizoic to endophytic or endozoic. They may change from anairobic to airobic. (3) They may change from non-pathogenic to pathogenic. (4)

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They may change from indol to non-indol producing. (5) They may change from non-decomposition to decomposition forms. (6) They may change from their original to a variety of forms, polymorphic forms, as it were. (7) They may invade the blood and internal organs before and after death or during retrograde tissue changes.

The origin of these parasitic forms is shrouded in as much mystery as the primary origin of the forms they infest, for not only have they been found within the intestinal canal blood and internal organs of the living young, but also within those of the still-born.

The chemico-pathological or spontaneous theory or axiom of the ancients that the corruption of one thing is the birth of another, so eloquently expressed by Lucretius, St. Paul and Byron, and the cellulo-pathological or creative theory or axiom of the modern: "No life without antecedent life," embodied within the remarkable hypothesis, "*Omni vivum ex vivo*," advanced by Francis Redi in 1668, and echoed by Virchow as "*Omni cellulæ e cellule*" in 1858, are as yet the bones of contention, while everything in nature points toward the fact that organic forms are simply media through which certain unstable elements, such as carbon, oxygen, hydrogen and nitrogen are brought into more staple conditions in conformity to universal gravitation,—that mysterious force in obedience to which all matter now existing in a state of unrest will finally be brought into a state of rest or equilibrium—when it may be written across the face of this planet with more truth than poetry:

Its crust is but a grave-yard,
The mould of all that were;
The dust of every living thing
That once abided here.

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DEPOSITS IN THE COLON.

By A. E. BALDWIN, M. D., San Mateo.

Physicians are sometimes called to cases suffering from acute pain, due to reflexes; various organs are examined with more or less care, and oftentimes after giving the mild remedies ineffectively, are compelled to resort to a hypodermic injection of morphia, or opiates in some form; there is no evident cause for the pain, which recurs as soon as palliatives are discontinued, and later, after every organ or structure that might cause pain has been examined, it will in many instances be found that the colon, the large intestine, is the seat of the disorder. The bowels may be free as far as daily evacuations are concerned, and the motions may be regular, and be followed with ease and satisfaction in some cases, the food may appear to be assimilated properly and the case may have the appearance of health, but on close questioning the following symptoms, one or more of them, will be found present: 1st. Pain, continually or telegraphic, usually at some sympathetic nerve center, or pain in some joint, or in joints on one side of the body; pain in some muscle or set of muscles, usually among the flexors. 2nd. Heavy weight sensation in the abdomen, sometimes intensified till the abdominal organs threaten to loosen their natural positions and obey the law of gravity, heavy weight sensations in the head, due to over-distension of cerebral vessels, until loss of sleep results, or sleep occurs at intervals only during the night; and finally the pulse, quickened and erratic, now stronger, then weaker; the respired air full of fecal odor, and more or less foul, and the tongue coated peculiarly, sometimes all covered, sometimes the center only, while the edges are red and free from any unnatural coating whatever, or one-half, dextral or sinistral, may be covered with a heavy cream-like covering, while the opposite side is clean to a line of demarkation in the center. The face, plastic and without color, general sensation of being "tired," eructation of gas after eating, and great uneasiness after the ingestion of foods,

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respiration imperfect and usually shortened, and the urine reddened and easily decomposing.

These are the symptoms in general of this class of cases. Sometimes only one of these symptoms points directly to the disorder, or all may be present, and the practitioner who sounds carefully the colon in its entire course, and can use the plexímeter and hammer, or better still, the hammer hand upon one or two fingers, will find full confirmation of the cause of the symptoms enumerated, in an area of dullness over some part of the colon; the sweat glands very inactive, and for months no moisture will be found upon the skin, the mind slow, mental impressions difficult to retain, and vigorous mental exercise an impossibility; in fact, in cases of long standing every organ and structure is involved, and all the conditions named are usually present, vital affinity is lessened, susceptibility of the tissues to nourishing stimulus is so modified that it may be nil.

In some of these cases there is pain in the epigastrium after eating or drinking; the lungs do not fill with air and the respirations are much shortened and quickened; usually the patient is unaware of any pending danger and is taken with diarrhœa; after a few motions there is a feeling of relief and nothing further is thought of it. In a few weeks another attack of diarrhœa comes on, this time with mucus and perhaps blood in the stools, and this condition so alarms the patient that he calls in some physician, who promptly pronounces the case diarrhœa and makes the matter worse by stopping the discharge with opium of some sort, acetate of lead, or any of the astringents commonly supposed to check diarrhœa, or perhaps gives a starch and opium clyster; this only intensifies the condition and a few such treatments allow septic material to absorb, and the temperature runs up to a typhoid; indeed we believe that many cases of typhoid originate in this way, and the contents of the bowel remain till after several weeks in bed. This may account for the success which follows the use of calomel in cathartic doses during the first stages of typhoid fever, the mercury kills the septic germs and removes the old and putrefying contents of a long distended and overloaded bowel. Ipecac is often given, which acts as a revulsive and relaxes the muscular fiber of the intestine and induces peris-

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talsis, which is much needed; turpentine in stupes or internally also brings on peristalsis and materially assists, but these remedies are not heroic enough, and if not persisted in the patient makes a slow and relapsing recovery. *When the discharges are old and foul and there is mucus or blood present, when there is a brick dust deposit which settles to the bottom of the closet, or when the discharges float, give repeated small doses of soda carbonate and magnesia sulphate, well diluted, every hour till the bowels unload; then go slow, wash out the colon with a 10 per cent solution of glycerine, nourish the patient carefully and he will improve.* To bear out our statements we cite the following cases:

CASE I. Mr. T., of Spanishtown, Cal. A gentleman aged about 40, who had been sick a long time, whose ailments had been gradually growing worse and failed to find relief among the local physicians, called for our assistance. We put him on

Soda carbonate..... ℥i.
Mag. sulph..... ℥iv.
Aqua cinnamoni ad..... ℥iv.

M. Sig.: Teaspoonful every hour till bowels move freely, then repeat the second day after. This case showed marked dullness over entire colon, and when the contents came away at first, nothing but old and dried scybalæ,—evidently mucus entangled with foreign matter,—was found in the vessel, floating on and in the urine, passed at the same time, which was very red, and at first neither had much odor. When, however, the higher portions of the bowels cleared off, much brick dust deposit would be found in the bottom of the discharges, granular to the touch and resisting the action of repeated washing. With the brick dust came minute blood points, some fresh, some old and dark, showing that the mucous lining had disintegrated, allowing the blood corpuscles to pass through and lose themselves in the mass accumulating along the inner intestinal walls. At this time the tongue, which had been wholly covered with a dark heavy coat, even to its under surface, commenced to clear off at the edge on the left side, and the action of the internal medication and injections in assisting to wash from the folds and rugæ of the colon, were followed by the gradual cleaning of the tongue, next the tip; and so

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proceeding back until when the bowel was emptied and free, the tongue was wholly clean. *It will not do to clear out the bowel too rapidly for fear of collapse of the patient*, but the soda and magnesia mixture must be given carefully, as after the first few evacuations it is necessary to give injections of olive oil to soothe and heal the inner intestinal coat as fast as the deposit is carried away. If the stomach will bear it, tablespoonful doses of olive oil may be given, the absorbents having been so long tired out allow the oil to pass them, and the denuded surfaces are thereby healed. In this case, as usual, the patient had strong desire for acid food, and acetic acid or vinegar is usually most convenient, either pure, diluted or in pickles; these are not to be taken while under the alkaline treatment, but easily digested prepared foods, well peptonized should be given at short intervals.

After taking the alkaline treatment for one week, the joints, which had been swollen and stiff, began to decrease in size and move more easily. In fact, the patient had supposed he was suffering from a low grade of rheumatism. Indeed, in nearly all these cases there is infiltration into and pain about the joints, which may produce rheumatism. Certainly some of its worst symptoms are assuaged by the careful ingestion of soda carbonate, and its primary action is to produce active peristalsis, which relieves the bowel of all foreign elements. We desire here to refer to an article by Dr. H. T. Goodwin, of Louisville, Kentucky, in the *New York Medical Journal* of June 9th, 1888, in which he uses cascara sagrada for rheumatism, and at one time he thought it a specific almost. He says: The cases in which cascara acts best are the acute with swollen joints and constipated bowels. Cascara grows in California, and has been used from the earliest history of the Jesuit Fathers, as a remedy for constipation, and we contend that the action of the soda and magnesia mixture is in the same manner anti-rheumatic, viz.: by removing, first, the carbonic acid, in combination with fermenting principles and discharging these in a natural manner, together with excreta that otherwise remains in the gut, is absorbed and so produces a thoroughly diseased condition of those portions of the body to which they are carried by the vessels of the colon, and on into the general circulation, and with this result, some one

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organ or series of organs may be in a weakened condition from previous disease, accident, occupation or heredity, and this organ or series of organs only able to work properly when carrying the normal fluids or natural elements is overtaxed, and the result is soon shown in the symptoms detailed at the beginning of this article.

CASE II. A lady aged 64, Mrs. C., living at San Mateo, Cal., had suffered for some time with a continual pain at the apex of the left lung. All ordinary remedies to ease her having failed, we were called to her bedside. The pulse was regular, slightly quickened, respiration shortened, the stomach unable to take but little food, and with only a few mouthfuls in the stomach a most distressing feeling. On examination the colon was found very full in its descending and sinistral portion. Unlike Case I, the tongue was clean and did not begin to coat till the bowel began to clear out. Mrs. C. reported that the bowels moved only "after taking medicine." The urine was dark red and very free. We prescribed the mixture given in Case I, and, after the bowels were moving off well, gave injections of glycerine, one part, aqua 10 parts, with pillow under the hips, and instructions to retain as long as possible. The odor of the discharges was something frightful, really we believe the husband, who attended her through her illness, had some excuse for going away to sea, and failing to return up to the date of writing this article. After the fourth day the pain slowly disappeared, and after two months' treatment she recovered.

We recall at this time a remark from Dr. Watson, of King's College, in his practice, to the effect that retained fecal matter often sets up typhoid fever, and it may not be removed till after the patient has been thoroughly physicked. This brings us to

CASE III. Mr. J. D. F., age 44, living at Belmont, Cal., sent for us one evening and complained of supra-orbital pain on one side. The skin being of a peculiar heat we used the thermometer, diagnosed typhoid fever, and told him the pain would not leave till the height of the fever was passed. We were correct, and we sincerely trust that we may be as fully forgiven for our misdeeds as we physicked him after a run of fever.

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CASE IV. A nephew of the above, aged 18, Mr. F., was taken ill; we attended him through typhoid fever, but as he was convalescing had difficulty in passing the urine. He had been treated in the conventional way with calomel, plenty of it, and, after being freely purged for some days, went on through the fever without complications. We found a quantity of very hard bluish balls in the rectum and colon, occluding the neck of the bladder. On removing these with glycerine injections the urine passed easily, some thirty or forty of these balls were discharged and our patient made a good recovery. We believe that the careful use of the salines would have removed the irritation produced by the fecal matter, and the typhoid condition would not have followed.

CASE V. Mrs. F., of Belmont, aged 42, sent for us. We diagnosed typhoid, put her at once on calomel for several days, removed a great quantity of fecal matter with glycerine injecta, and although using seidlitz powders freely had a beautiful case of salivation. This case we do not doubt if put upon soda and magnesia treatment some weeks before would have saved a run of fever, in short, we believe that habitual constipation, dysentery, diarrhœa and typhoid fever are all due to less than normal activity of the intestinal coats.

In other words, lack of peristalsis, or absence of it entirely, accounts for all of these conditions. In constipation, which itself may be due to various causes, and principally from absence of the bile, we have a condition which, without peristalsis may lead to any of the conditions just mentioned; the mucous coat of the intestine in this case throwing off mucus in order to protect the foreign matter, hides it in a measure and thus prevents absorption of the fecal poison. This throwing off of the mucus, long continued, leads to dysentery with this same mucus in the stools, and where the glandular structures have not been protected there is extravasation of blood. In dysentery there is oftentimes thrown off large quantities of old fecal matter, while in diarrhœa the mucus and blood is so mixed that the contents of the bowel are thin and remaining for a length of time decompose, and when absorbed instead of passing away per rectum give rise to typhoid fever. We note that the ascending colon contains the glands which are continued from the small intestine, and these glands may

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be over-productive of secretion, or may be so irritated that inflammation may result. All these conditions we concede are results of no peristalsis, which must be followed by a filling of the rugæ, and folds of the latter part of the small, and the whole of the large, intestine.

We have been often called to patients with a temperature of 101°, 102°, 104°F., and have put these cases on the mixture given in Case II., and have found three or four calls later all that patients required; they recover. We have used all the remedies usually given in these cases, calomel, ipecac, jalap, soda bicarb, starch and laudanum, lead acetate, bismuth, nitrous acid, iodine, potass chlorate, copaiba, ergot, flax seed, tannic acid, catechu hæmatoxylin, alum, oil of cajeput, sulphuric acid, camphor, belladonna, strychnine, castor oil, rhubarb, lime water, pepsin, charcoal, chloral, carbolic acid, and chlorine water, in combination with other remedies, laid down in the text books, but the saline mixture acts more readily than any other. We do not use it after the temperature has been over 100°F. for a week or ten days, believing that the ulceration must go on to its end, but oftentimes the heat drops after using the saline mixture for twenty-four hours, and every bad symptom of the patient is rapidly lessened. It is said that soda carb. is highly irritating; however, the general tonicity of the muscular coats of the intestine increases, and the old matter in the bowel soon begins to pass away.

Sulphate of magnesia is a most active hydragogue cathartic, producing an evacuation of watery discharges without irritation; the carbonate of soda acting as a fresh irritant determines a flow of blood to the intestinal tract, and the sulphate of magnesia extracts the watery elements. In the *Medical Summary* (Pa.), of April, 1894, we published an article entitled "Brick Dust Deposits," with a few notes of five cases which were put upon—

Mg. S. O4.....ʒii.
Na2. C. O3.....ʒiv.
Aqua Cinnamoni ad.....ʒiv.

M. Sig. Teaspoonful every half hour. Glycerine injecta also were given, and in some cases small, in others, larger quantities of brick dust or chalky deposit were carried away.

This same deposit carried into the circulation, and left around the joints, undoubtedly causes the gout and rheumatism of

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many when deposited in different structures. We chanced to read in some old practice not long since of a man who had so much of the gouty deposit in his knuckles that he could keep count with them on the table, while playing a game of cards. [1 & 2] Persons of sedentary habits, and high livers, with little exercise are subject to these deposits in the colon.

CASE VI. Mrs. B., age 52, a resident of Pilarcitos, Cal., had been a sufferer for many years, having somewhat irregular attacks of diarrhœa, and vomiting, the stomach very irritable, and sleep unrefreshing. Put upon the saline mixture, the contents of the colon came slowly away, very old, fetid and with much mucus, some blood points toward the last. Olive oil was well borne by the stomach, and after three weeks treatment she made a good recovery.

CASE VII. A baker came into our office not long ago suffering from pain in his arm and hand; the condition had existed some time, and he was unable to work. He was put upon the saline mixture, and within forty-eight hours the pain was relieved and the swelling, which had been considerable, disappeared; the bowel unloaded freely.

CASE VIII. Mr. S., a tailor, in San Francisco, visiting his horses at Hobart's stock farm, at San Mateo, was suddenly taken with terrible pain in the region of the ascending colon. We sweat him freely, gave morphia hypodermically to ease him, and put him on the saline mixture. After a few doses he was relieved of a great quantity of very old accumulations, and next day went back to San Francisco.

CASE IX. Mr. J. H., of Redwood City, sent for us, said he felt heavy, could not sleep, nor eat, and we put him on the saline treatment. He told us how many years his accumulation of fecal matter had been going on, possibly twenty, "had taken everything that was physicking," ours proved the right

[1] The Emperor Charles V., who in early life was a keen sportsman, was compelled before he was 50 to be satisfied with hunting in his garden, and his hand was so enfeebled with gout that sometimes he was unable to break the seal of a letter.

[2] Milton in his later years is described as sitting in an elbow chair, dressed in black, pale but not cadaverous, his hands and fingers gouty, and with chalk-stones.

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sort, and in two months he was able to eat, sleep, and lighter by about twelve pounds, of fecal discharges.

CASE X. Mr. W. McC., age about 34, a farmer at Laurel Creek, Cala., on account of bad health, went to Mexico to improve it; had for a long time attacks of diarrhœa and fetid breath. Returned from Mexico, had a fresh attack and sent for us. This was a severe case; the lungs had become so foul that a "coughing spell" in the morning was necessary to raise the dirty mucus. There was continual headache, and an erratic appetite; in this case there was so much matter in the colon, and so impacted, that we gave injections of the saline mixture well diluted, as the stomach objected to it, and also injections of pure olive oil, as there was much blood color in the stools. In this case the color was bad, the red blood corpuscles almost all destroyed, and every organ "clogged," the kidneys slow at times, and the brain very slow in action; the sweat glands totally inactive, and we entertained serious doubts whether the patient had vitality sufficient to bring about the normal action of the organs and structures. But very little of the most carefully digested peptonized foods could be borne by the stomach, and congress and soda water seemed more easily absorbed than anything else. After the deposits in the colon first began to discharge, and but small amounts of these could be taken at intervals of half an hour, the ingestion of these, together with hot baths, containing an ounce or two of soda carbonate, and vigorous massage, soon opened the skin. The soda and magnesia in this case seemed to induce endosmosis and exosmosis of fluids, and after remaining about a month in bed our patient, gradually gaining strength, with the aid of the peptonized foods, got up. In eight weeks from that time he gained nineteen pounds, the contents of the bowel were half brick dust, colored by bilirubine, and the remainder mucus and scybalæ.

CASE XI. A German, F. S., living eight miles from Redwood City, Cal., a laborer, age 23, on a farm, came to us complaining that he could not pass any wind and his diagnosis was soon made, often this is the case and the gases accumulate by degrees and go up instead of down. It was necessary to put him on the saline treatment for several days before the colon was evacuated, and here we may notice that in some

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cases only a drachm or two will move the bowel freely, if the contents have not been long accumulating, while in cases of long standing, where the system is thoroughly filled with the poisonous toxic elements of degeneration, the whole of a four ounce mixture is necessary, at intervals of an hour or two. Sometimes the second bottle is used before there is a systematic reaction, and this action may not be shown in the quantity or quality of the discharges from the bowel, but in the skin, kidneys, liver, spleen, heart, and lungs. The skin long inactive wakes from its inaction, the kidneys which have been over-loaded with solid elements, show a freer movement, the bile duct which may have been occluded, forcing the biliary elements into the circulation when they should discharge into the small intestine, and so assist peristalsis, the spleen in its relation to the red blood corpuscles, and the lungs, unable to oxidize the impure elements of the blood, feebly thrown into them by an over-loaded heart, all these organs wake from their lethargic condition, and soon take on healthy action. In a treatise on "gout and rheumatism" by P. Hood, M. D., he cites a case of a man who had for years suffered with a dry spot, eczematious in character, which had been due to slow action of the bowels, which finally ruptured and discharged a great quantity of sanious matter, much to the patient's relief. Blue mass, etc., was given him, and recovery followed.

CASE XII. Mrs. J. S. W., living in San Mateo, aged 52, had long been annoyed with running sores on her legs, they left black irregular petechial spots, and were of large number. We quite accidentally discovered a large accumulation composed of "brick dust and stewed apples," and the sores on the legs were no more. We believe that tubercle is nothing but this granular, chalky, tophaceous substance, which accumulates among the absorbents of the mesentery forming the tubercle nodule, which afterward develops the tubercle bacilli, carried to the coats of the vessels, produces calcification, and carried into the lungs, forms the tubercular deposits there, and in the kidneys forming concretions, in the bladder forming stone, and in the gall bladder, the gall stone; in all these cases, of course, in combination with other elements, and all because of the many causes of absence of peristalsis.

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CASE XIII. Mr. G. W. C., age 39, living at Palo Alto, had gone through typhoid but did not make a good recovery; the face was badly pimpled, and an area several inches in circumference, on one side of the face, was covered with a scaly, pustular eruption. We made a diagnosis of deposit in the colon, after sounding the parts carefully, and put him on the alkaline treatment; he had been very moody, hysterical, and subject to continual headaches, with constipation. In two weeks he was much improved, his former buoyancy of spirits returned and he took on flesh rapidly. His case, as often occurs, is very disastrous to the brain and nervous system, which shows much irritation, and generally approaches a neurasthenic condition.

CASE XIV. Mrs. T. W., living near the Homestead, at San Mateo, called us to see her for a fever which came on daily; hectic was very marked, and after carefully examining her case we found a very old deposit in the colon, though the bowels were moving regularly. There was a filling up of the rugosities and folds of the whole colon, which evidently had been accumulating for a long time, the mucus thrown out was in great quantity and was mixed with old blood points; this sort of material floats on, and in the urine, and seems to gather around the periphery of the intestines, allowing passage of the daily discharges. We used in this case along with the saline treatment, turpentine, both internally and in stupes. The patient has since enjoyed the best of health.

We usually instruct our patients to keep at hand a bottle of a mixture of less strength than the usual, in case of a recurrence of former conditions, which is liable to recur until the organs previously involved have recovered their individual and compensatory action. Massage is a great aid to the treatment, and especially of the colon itself, and electricity acts nicely in some cases. There is usually little desire for salt, and this is a remedy we always insist upon, with all the boiled water the patient can drink.

Following this somewhat individual record of these cases, we have a list of some twenty others in which the symptoms have varied very much, but have corresponded with those outlined at the beginning of this article. In the care of these cases the surgeon requires patience, tact and skill, and those

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organs that have suffered most must be assisted by the special remedies that will stimulate them and bring back the normal conditions. We believe this condition, torpidity of the colon, is sadly overlooked, if we may judge from those cases which we have attended, and the most serious of which are detailed in this article. The cinnamon water as a menstruum in our saline mixture in itself destroys microbes and arrests putrefaction, and was in use by the Egyptians in the preparation of the mummies now found in our museums. The action of the sulphate of magnesia and soda carbonate has been already spoken of, and the relative size of the dose of all three remedies must be carefully applied to each individual case. We have been very fortunate with it and should be glad to hear in the future from any of our brother physicians who may have individual or tabulated cases, or would be glad to hear from them by letter.

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State Medicine and Hygiene.

REPORT OF THE COMMITTEE ON STATE MEDICINE, HYGIENE, ETC.

By W. R. CLUNESS, M. D., Chairman, San Francisco.

With great reluctance I accepted the task of preparing a report on State Medicine for the present meeting, and the indulgence of the Society is craved at the outset for the shortcomings which may be found in the discharge of the duty. This department properly consists of four branches, viz: Public Hygiene, Medical Jurisprudence, Medical Education and Public Institutions for the treatment of various infirmities. Obviously it would be impracticable to make anything like a full report on all these branches, or indeed on any one, and I shall not undertake to touch even on Medical Jurisprudence at this time, but confine myself to a few remarks on the other three upon points which are timely and of interest to practitioners in our State.

PUBLIC HYGIENE.

Gratifying progress has been made within the past year in public hygiene in several important particulars. The discovery of a specific bacillus causative of the plague by Dr. Kitasato, of Japan, was announced in August last. The only surprise in this connection is its discovery by one of a nation which has so recently adopted western methods of progress in civilization; but knowing that he has studied with the leading bacteriologists of Europe we accept his presentation with the same credulity and confidence which would be extended to other scientific investigators.

From various quarters there is evidence that health authorities are active in urging preventive measures for limiting the

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spread of tuberculous diseases. The Michigan State Board of Health has resolved to ask legislation to prohibit any one from acting in the capacity of a teacher or professional nurse without a certificate from a reputable physician of freedom from tuberculosis; also prohibiting the sale of milk from cows not proved exempt by the tubercular test. Dr. Schweringer, State Health Officer of Texas, has issued a circular to county physicians and health officers, urging enforcement of recognized measures for the restriction of pulmonary consumption, with special reference to the hotels in Southwestern Texas, which are resorted to by invalids. Since the discovery of the bacillus tuberculosis pulmonary phthisis has materially declined in Germany, as shown by the following figures: At Munich from 40.8 deaths per 10,000 of population in 1883 to 30.8 in 1893; at Berlin it was 34.7 in 1883, and 2.57 in 1893; at Vienna the mortality has fallen from 69.29 to 47 per ten thousand inhabitants. A corresponding reduction has been observed at Frankfort, Dresden, Stuttgart and other cities. All this is attributable to local and personal hygienic precautions. I have not seen like numerical comparisons for England, France and the United States, but doubt not some improvement might be shown, especially in England.

Perhaps the most noteworthy advance in curative medicine during the past year is the antitoxine treatment of Behring and Roux for diphtheria by the subcutaneous injection of blood-serum of horses rendered immune by successive injections of the virus in increasing strength. This naturally led to experiments on human beings with the serum in order to render them insusceptible to diphtheria; but so far it appears that the immunity thus conferred lasts only about six weeks. Similar experiments have been made for the prevention of cholera with a so-called anti-cholera vaccine. It is said that a Dr. Haffkine has inoculated over 25,000 persons in Northern India, giving them complete protection. Inasmuch as immunity is not gained by one attack of cholera, as likewise with diphtheria, we may hardly expect the protection conferred by the inoculation to be permanent. We also recall similar experiments for the prevention of yellow fever by Freiere at Rio de Janeiro, which have not been accepted as conclusive.

During the past year small-pox has manifested unusual

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prevalence throughout the country east of the Rocky Mountains, indicating another cycle of activity, and in my judgment we have reason to apprehend the same experience on this coast. Since its disappearance about seven years ago material for its ravages has rapidly accumulated from neglect of vaccinating the children born since that date. It is greatly to be regretted that this protection is generally deferred until children are old enough to be sent to school, and then many persons seem to have conceived the notion that the only occasion for vaccination of children is entrance to the public schools. Thus the liberty of having and communicating contagious diseases seems to be one of the blessings of government by the people—a privilege denied by the stricter governments of Europe.

MEDICAL EDUCATION.

It is gratifying to observe that the two medical colleges of San Francisco have determined from this time to require four annual graded courses of lectures as a requisite for graduation, and it is to be expected that the Medical Department of the University of Southern California will soon fall into line with the other first class medical schools of the country. When we recollect that less than twenty-five years ago no medical school in the country required attendance on more than two courses of lectures, and these not graded, we have reason to be satisfied with the present advance in the standard of professional attainments. And we may be excused, I think, for an honest pride in the fact that the great progress lately made in both public hygiene and in medical education is to be credited to a voluntary movement within the body of our profession, and not in obedience to demand from the public at large. Indeed the fondness of the public for all sorts of empty pretension and the readiness of the press generally to sell its service to quackery in every form, are so discouraging to genuine progress, that we might be pardoned for giving people no better than they deserve.

The organization of an Army School of Medicine by the new Surgeon General, Sternberg, in which public hygiene forms a prominent branch of instruction, deserves unqualified praise. It is to be hoped that medical officers, on entering the other two branches of our public service (the Navy and the Marine

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Hospital), may before long have the benefit of similar training. Thus in a few years the government would have at command a body of sanitary experts, and would be able to spare details for emergencies wherever needed, at home or abroad. It has been proposed by some one in the East, whose name I do not recollect, to afford post-graduate instruction in hygiene, and some degree or certificate attesting proper qualification to physicians who contemplate pursuing sanitation as a specialty. This proposition might suit his latitude and longitude, but speaking for California from long observation, I should say that in such an institution a chair of the Theory and Practice of Politics would be indispensable and would form the most important part of the outfit.

OUR INSANE ASYLUMS.

These institutions have received so little attention from the Committee on State Medicine for a number of years, that I have thought it proper to make some remarks upon them. Accordingly the following list of inquiries was forwarded to the Superintendent of each one of the five State Asylums:

1. Is due attention paid to the legal requirements, that the property of the insane should be used for their support, when it can be made available?

2. Are there chronic insane persons in asylums who could be safely cared for in county almshouses? If so, is this number large or small?

3. Are the insane put to work when found adapted? If so, what occupations are given them? Could the number thus employed be much increased? Would such increase, if practicable, conduce (and in what degree) to the welfare of the insane, and economy to the State?

4. Are inmates classified and kept in separate quarters? Does over-crowding interfere with classification? If so, how?

Answers have been received as follows:

A. From the Stockton Asylum.

1. Yes, so far as I have the means of knowing.

2. There are some here, but not a large number. I do not believe, however, that they would be cared for as comfortably or as economically in county almshouses.

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3. One-fourth of the patients are put to work. This number comprises about all who are able or willing to work, or whose employment can benefit themselves or the State. They work in the garden, in the halls, on the grounds, and a few in the workshops.

4. Inmates are, as far as possible, classified and kept in separate quarters. Overcrowding, of necessity, interferes with classification; for ample room is an indispensable condition of satisfactory classification.

B. From the Napa Asylum, no report.

C. The Agnews Asylum.

1. No, the ability of relatives to pay is not as thoroughly investigated at the time of committal as it should be, though there has been a marked improvement lately.

2. Yes, number large, but questionable if it is not an advantage to have them cared for in State institutions, where it can be done more economically, and probably better. To care for these people in county almshouses would require special provision in the way of buildings and nursing. The State of New York enforces care of all insane, and has done away with keeping them in county almshouses.

3. Yes, work in laundry, sewing rooms, kitchen, dairy, farm, vegetable garden, flower garden, engine room, dining rooms, and in nearly every department of the building. The number could be increased with increased facilities, such as shops, apparatus and skilled attendants. Such increase of employment would promote recovery, make patients happier, and to some extent conduce to economy to the State.

4. Yes, single rooms for violent and noisy patients; dormitories for quiet and harmless class. Overcrowding decidedly interferes with proper classification by causing rooms to be doubled that should have but one patient; by increasing the numbers in a ward, and by forcing together types of mental troubles that should be kept separate. The last three asylums built in this State are, in my opinion, not well arranged for proper classification, by reason of the wards being too large and too few in number. The adoption of the cottage-system in this State, in the enlargement of asylums, would, I believe, be a step in advance. A change in the law that would require

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counties to pay a portion of the burden of caring for their insane would lessen the State's appropriation and favor a more careful examination of those committed, as the bills for their maintenance would come before Boards of Supervisors.

D. Mendocino Asylum.

1. The law makes it necessary for the Judge who commits a person to an asylum to state in the commitment whether the man committed or his friends have sufficient property to enable them to contribute to the support of such insane person. If so, a guardian is appointed, and such patient pays a sufficient sum to about cover the actual cost of maintenance, which sum is usually $45 per quarter, and a sufficient sum to cover cost of clothing. The facts are, however, that there is but a small percentage of *pay* patients in State asylums. Frequently the Judge does not know the financial condition of the patient, and the friends may conceal facts from him bearing on the subject. I have no doubt that the State is paying for large numbers of insane persons who have property of their own. In Mendocino Asylum we are watching this matter as closely as possible, but we have a very small percentage of pay patients.

2. I answer yes. There is quite a percentage of chronic, harmless, demented insane persons in our asylums who could be cared for in county almshouses; but they would still be charity patients who would have to be supported by the tax-payers of the county, and at greater expense than by the present system, the per capita being much less in asylums than in county almshouses or hospitals. In the asylums they also have better care, as a rule, and can be made more useful because the asylums put such patients as are able to work at garden work, in the fields, ditching to drain their land, grubbing and cleaning up land, cutting wood, helping about the laundry, engine house, bakery, kitchen, and the wards, and in many other ways. This cannot be done in county hospitals as at present managed, as not many of them have facilities for putting such persons to work.

The State of New York has fully tested the county system for her harmless insane and, having found it impracticable, has abandoned it, and all persons are now cared for in State

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Asylums with the exception of New York and Kings Counties, which take care of their own insane. In the State of New York, however, such county pays a certain amount directly to the asylums for the care of their insane. Probably the number of workers could be increased in some of our larger asylums with advantage to the patients and to the State. Mendocino Asylum is a new asylum, and we have but a small number of patients. Here we work all who are able, as we find it one of the most successful means of treatment. To get a patient interested in some occupation is the most successful way of relieving him of insane ideas and delusions, and of leading him back to a normal mental condition.

4. Yes, as far as practicable. In this asylum we have four wards for male patients and two wards for female patients. This gives us but a limited opportunity for classification. All cases are admitted at once to the receiving ward, where they remain until an opportunity can be had to study each case, when they are sent to other wards—some to a quiet convalescent ward, others to the violent ward, etc. Of course, where an asylum is crowded there is not an opportunity to properly classify.

3 is answered with question 2 to some extent.

E. Southern California Asylum.

1. Yes, so far as the law directs.

2. There are a few.

3. Yes. A large proportion of the chronic insane are given employment, so far as our facilities permit. Out of three hundred patients there are seventy-five employed in various departments, on the grounds and the farm. This number cannot be greatly increased, even with a larger population. The welfare of the chronic insane is undoubtedly subserved by furnishing them with light employment. Acute cases need rest, hygiene and medical treatment. The old, demented and feeble, as well as the violent, cannot be advantageously employed.

4. Yes, so far as our facilities will permit. Over-crowding does not particularly interfere with classification, provided the number of wards is sufficient to care for each class.

With the foregoing testimony as a guide, I now offer a few remarks.

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1. It appears to be the duty of the Judge in making the commitment of the insane person to an asylum, to inquire into his ability, or that of his legal custodians, to bear the expense of his maintenance, and it further appears that this duty is neglected. There is a large number of people who have no scruples in becoming public charges, or in throwing their relatives and dependents on the public, in such ways as receiving gratuitous relief in public dispensaries, hospitals and asylums, and in enjoying pensions from the national government; and the abuse of charity intended for the needy only is a burden difficult of avoidance. It is quite probable that the New York plan of making each county responsible in whole or in part, for the maintenance of its insane in State asylums, would go far to correct this abuse; for county supervisors are always closely watched by tax-payers.

2. It is doubtless true that chronic lunatics, as well as the violent insane, can be more efficiently and economically cared for in large institutions than in small ones; but it is also evident that the room in our State asylums is largely occupied by demented subjects who need scarcely any restraint or treatment, and to whom work in the open air of our genial climate would be a benefit. It has already been proposed to house this large class in inexpensive cottages, instead of over-crowding the palaces which seem to have been constructed rather for architectural effect and the disbursement of public funds for local benefit than for the relief of diseased and needy persons; and if at the same time, suitable industrial employment could be furnished, a manifold advantage would ensue.

3. It is apparent that the importance of giving manual occupations to such insane patients as are adapted to it, is recognized by all who have answered the inquiries, though they do not fully agree upon the method of carrying out the measure further. For reasons already stated, it seems to me that extension of this measure should be in the direction of agricultural work for men, and for women such work as will not deny them abundance of fresh air and direct sunshine, as far as practicable.

4. The advantage of systematic classification is admitted on all hands, but it is generally alleged that over-crowding is an insuperable obstacle. One only answers that this does not

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particularly interfere with classification, provided the number of wards is sufficient to care for each class. This suggests the inquiry, why then were not separate wards enough allowed in the original plans of the buildings before they were erected? Classification is no novelty in asylum management, neither is over-crowding a new experience. Another inquiry: three of our largest asylums are located at no great distance from large centers of population, and some discrimination might be exercised in the distribution of cases so as to favor classification. The legislature probably contemplated some such arrangement when the Agnews Asylum was established for the reception of the chronic insane only, but it has lately been opened to all classes, presumably on account of the congestion of the Stockton and Napa Asylums. The establishment of two new asylums more recently removes this difficulty, and would perhaps allow Agnews to be devoted to its original purpose, if it were better adapted than either of the others.

It may be proper to advert to the bill recently introduced before our legislature, and defeated, for the formation of a single governing body for all the asylums, instead of separate boards. It is probable that the reasons alleged in the Governor's special message and in some of the newspapers were not considered convincing by the legislature, in the light of Eastern experience. In Massachusetts the plan of vesting the control of details of administration in a central board was rejected at the outset; while its adoption in New York has conduced more to vexatious obstruction in obtaining necessary supplies than to economy.

It is the province of the Board of Examiners already provided, to keep expenditures within the limits of reason and the law, and, in general, faithful enforcement of existing laws is more needed than new legislation. It is indeed desirable that there should be a degree of uniformity in the management of our asylums, having for its object the recovery and general welfare of the insane, rather than supervision of the purchase of supplies; but it is questionable whether a single controlling authority, even for the former object, might not result more in friction among officials than in benefit to disordered intellects. Advice is sometimes better than command, when authorized by law; and coming from a responsible source, it is likely to be

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heeded. It seems to be generally overlooked that Art. 2,979 of the Political Code empowers the State Board of Health to "Act as an Advisory Board to the State in all hygienic and medical matters, especially such as relate to the location, construction, sewerage and administration of prisons, hospitals, asylums and other public institutions." Many of this Society may recollect that our State Board of Health has twice succeeded in obtaining passage by the legislature of a bill giving it an Inspector, one of whose duties it would be to afford the necessary information for guidance in the discharge of this function; and may remember that the Governor in both instances objected on the ground of economy, though approval was given to creating the place of legal adviser to the board at the same cost. While economy at present is so much in demand in our State affairs, it is noteworthy that this kind of oversight, already contemplated but not adequately provided for in the code, would be the least expensive solution of the problem, and probably as satisfactory as any.

Recent legislation favoring sanitary interests in our State is conspicuously small, if I may be allowed to use a Hibernicism. The most prominent is an act to provide against the adulteration of food and drugs, intended probably to render more efficient Art. 382 of the Penal Code. This article is broad enough to cover all adulterations and dilutions of food, drink, medicine, spirituous, malt and vinous liquors, practiced with fraudulent intent, and needs only energetic application by interested parties or the constituted prosecuting authorities and fair interpretation by the courts. New legislation for sanitary protection is less needed than vigorous enforcement of existing laws. The people choose directly their own law-makers and judges, and it logically follows that, on the whole, they get as good protection as they deserve. As to shortcomings, most people don't know or don't care; the remainder can only grumble or possess their souls in peace.

DISCUSSION.

Dr. T. W. HUNTINGTON, of Sacramento: The selection of the chairman of this committee was a most fortunate one. I presume there are few men in the State who have given so much time and attention and hard work to sanitary matters as

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Dr. Cluness. I hope that the recommendations he has made will receive due and respectful attention on the part of the Society.

Dr. J. H. STALLARD, of San Francisco: I am delighted to hear of the enormous decrease of phthisis in Europe. It is the most remarkable gain in human life in England with the exception of the diminution of the deaths from typhoid fever during the last forty years. In every part of England the diminution of deaths from consumption has been really marvelous, amounting to over 50 per cent. It was my fortune to be a member of the Asylums Board in London, and I took an active part in the building of asylums. I hold that it is most important that there should be a complete separation between the chronic and the acute insane; of that there should be no doubt whatever. There should be no chronic insane patients kept for a longer period than a certain definite time, may be six months or a year. Of the chronic insane a large proportion must be kept in asylums specially built for them. They do not require the same amount of classification, medical care and nursing, and they may be put altogether upon a different footing from the acute cases. I am also of the opinion that a very large number of the chronic cases might be properly located with individuals outside. Those patients who are able to do a little work might be located with farmers, who would treat them kindly and far better than the officers of the asylum could, and their labor could be utilized for the benefit of the community. I do hold that we cannot, generally speaking, treat humanity by wholesale, and the more we distribute and separate this particular class the better it will be, not only for the class, but for the community. They may not have as fine clothes and as perfect beds to lie upon as they would have in a State asylum, but, on the whole, they would be freer, happier and more comfortable. There is a great deal of force in the suggestion to put the asylums under one management, but I think there ought to be an inspection over and above the management—a well-educated, independent authority, fully acquainted with the habits and treatment of the insane. I know no better or more economical management of the insane than in Scotland, where the insane are placed, to a large extent, with farmers. I think there is a great field for improve-

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ment in the management of the insane in this State. I agree with Dr. Cluness that the public get what they deserve; but what is the remedy? It is not to increase the powers of the State Board of Health, or anything of that sort. You cannot impose upon an ignorant populace more than they deserve, and, therefore, you have to educate the people and teach them the true value of sanitation. Commissions composed of men with large private practices should not be appointed, but we should instruct the people through men of their own selection. This city will never get a good sewer system until the people are convinced of its necessity. No Commission, or Board of Works, or Mayor, that you can elect, and no person individually, can ever be found to impose upon the citizens of San Francisco an expenditure which may amount to millions without their knowledge of what should be done.

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NATIONAL BUREAU OF MEDICINE.

THE OPIUM HABIT AND THE INDIAN AND CHINESE OPIUM TRAFFIC.

SUPPLEMENTAL REPORT OF COMMITTEE ON STATE MEDICINE, HYGIENE, ETC.

By M. M. CHIPMAN, M. D., San Jose.

NATIONAL BUREAU OF MEDICINE.

Mr. President and Members of the California State Medical Society:

Of the great benefits to be derived from government intervention to prevent the spread of infectious disease, and also to aid in the suppression of those immoral practices, vicious traffics and hurtful industries among the people, which promote the development of diseased conditions; and of further extending the work of the government, in the direction of increasing the knowledge and the means of improving the public health and the general welfare, the medical profession is so well informed, that it is something of a wonder, to some members of the profession, that our congressional branch of the government should be so slow and apathetic, in regard to the establishment of a Medical Bureau, the benefits of which, it would seem, should be so apparent to all citizens. But the fact is that the people, at large, are not well informed upon this subject, and it requires agitation, the more general and more explicit dissemination of knowledge, in regard to it, in order that the majority of the body politic shall come to understand the matter, sufficiently, to know that Congress will not be chargeable with having created a department, mostly at the instance of and in the supposed interest of the medical profession, and by it entailed an unnecessary expenditure of money, in its maintenance; and when that time arrives, Congress will be ready to assume the responsibility of the measure, and, I apprehend, not until then.

Among the most noted instances of modern government in-

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tervention in the prevention of the spread of disease, was the espousal, by the British government, of the discovery and work of the philanthropic and persistent genius, Dr. Jenner, and in placing the matter of vaccination squarely before the public, and issuing instructions, as to the proper method of its application; and this authoritative endorsement of the great discovery not only caused it to be adopted in private practice in other countries, but also brought it to the attention of other governments, by which the practice was promoted and by some legally enforced; and thus this preventive measure soon prevailed throughout the civilized world, and has been the means of measurably suppressing what had theretofore been one of the most destructive, the most frequently recurring and generally prevalent of the epidemic diseases.

Asiatic cholera, coming up from it most constant habitat, in the low hot regions of India, in its incursion westward, had over-reached its former limits, and in 1830 penetrated into the countries of Europe, and during the middle decades of the present century, by its several invasions, had become the terror of the civilized world. For some years, nothing prevailed against it, but, by degrees, investigating minds were becoming agreed as to its origin and means of propagation, and, by the aid of governments and municipalities, had already devised means of arresting its progress, and limiting its extent of prevalence, when the German government, with a wisdom born of enlightened enterprise, sent forth the commission of able scientists and thorough workers, under the leadership of Professor Koch, the discoveries of which settled permanently the etiology of Asiatic cholera, and which has enabled the nations of Western Europe to so completely organize against its attacks, that its invasions, of later years, have been inconsequential, as compared with the great destruction of human life resulting from its visits at the earlier periods.

In America, we have rested behind the barriers of the European nations, raised in their own defense, and the broad natural moat which separates us from the old world, and not since the invasion of the Missisippi Valley, in 1873, has the dread disease obtained a foothold in the United States, the few sporadic cases, which have passed the quarantine barrier, having been promptly isolated by the local authorities interested, and

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the germs of infection suppressed before they had opportunity of further propagating the disease.

Much has been said and written about the prevention of the spread of tuberculosis. This is a very difficult subject for legislation, and I don't see what can be done, in that direction, unless it might be to make it obligatory on physicians in practice to report what they thought to be well marked cases of tuberculosis, to the legally constituted boards of health, the duty of which it should be to summons the presented party for examination, and if the diagnosis of the physician should be confirmed, then the diseased party, to be furnished with printed instructions, as to personal conduct, to prevent the spread of the disease, especially in crowded assemblages, on railroad cars or in crowded streets, on which occasions, the infected person should be required to make use of a portable cupsidor, and the sputa and phlegm accumulated to be duly destroyed and the cupsidor disinfected. It would not be necessary that the original complaint should be sworn to, and the whole thing should be kept private, unless it might happen, in some cases, that the proceedings should be made the subject of future legal inquiry, when the original preserved complaints and the books of the board of health might be subject to examination.

In regard to diphtheria and typhoid fever, the expression has often been made that they should be "stamped out;" but not so long as fæcal matter and accumulating offal of cities continue to be removed by a system which serves to maintain immense culture media for the propagation of the pathogenic microbes of those diseases, can they be stamped out. The direct method of the disposal of the offending matters has stood the test of ages. The Chinese by it have been able to keep rid of the diseases named, and also, in addition, for many centuries, by the applied recuperative power of the discarded substances, in the renovation of soil, have they continued the maintenance of their millions of population, which they could not otherwise have done. But the popular modern sentiment, that to return to any ancient method, would be retrogression, and the position of that profession, always consulted, which prompts the rejection of any system, but that which involves the most difficult engineering problems, have apparently pre-

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vented even the examination into the system, for its merits, by which our antipodeal acquaintances have achieved continued success, and we continue to suffer the infliction of those dreaded diseases, which are propagated by the very methods, which we, even with greater net expenditure, unreasonably adopt to get rid of them.

La grippe, as it is popularly called, is one of our latest developed epidemic diseases, and yet it has already been prevalent in several instances in different countries in Europe, where it has attacked prince and peasant alike; and in the United States it has at different times invaded the homes of the laboring people, and crossed the threshold of the millionaire, and not infrequently attacked our most noted scientists and active medical practitioners, and it has been the cause of much inconvenience and suffering and no small aggregate of mortality; and yet, whilst, in a general sense, it is regarded as a microbic disease, but little has been ascertained as to its real etiology, and no man can say as to whither it comes or whence it goes. Had we the much needed medical bureau, we would have a corps of competent persons, salaried by the public and furnished with the necessary materials and appliances, whose business it would be to expend their energies in making investigation of new diseases, and of aiding, by furnishing hints and instructions, the work of private investigators; but without such an organization, matters of this kind are left to chance, as it were, and what is everybody's business is no one's business, and so a necessary investigation is neglected, the knowledge of its cause unascertained, the course of prevention of a fatal infectious disease, as yet, without any established system, or even precedent method of procedure having been marked out.

Leprosy, of which we have such ancient accounts, and which still continues to be a seriously prevalent disease, in some parts of the world, has been and is yet, a subject of much dispute, as to whether it is infectious or non-infectious. Foster's Encyclopædic Medical Dictionary defines it as a "chronic constitutional disease, endemic in many regions of the world, and due to infection (usually acquired by prolonged intercourse with an affected person) with bacillus lepræ." But there are many medical men, who have had good opportunities of observing

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the cause, who dispute the correctness of Foster's definition.

Dr. G. L. Fitch, now resident and in practice in San Francisco, was resident and in practice in Honolulu from December, 1880, to December, 1885, four years of which time he was the physician to the Hawaiian Government, and in which capacity it was his duty to make frequent visits to the leper settlement of Molakoi and superintend its medical service; and, becoming interested in the subject, he made a study of the causation of leprosy and its manner of infection. In a lengthy paper, published in the *New York Medical Record* of September, 1892, Dr. Fitch, after extensive experience and years of close observation thereof, set forth his views in regard to its manner of propagation. He takes the position that leprosy is not an independent, separate disease of itself, but an advanced stage of syphilis, and which he denominates the fourth stage. But as the doctor does not make out a third stage as intervening between the secondary form and the condition denominated leprosy, it would appear to me to be more appropriate to call it a third stage, as the disease manifests itself, according to the doctor's paper, among nations, or with individuals, who had been, prior to the existing attack, virgin to syphilis or unaffected with any syphilitic taint. The doctor supports his views with very strong, if not conclusive, evidence; among other things, that on the discovery of the Hawaiian Islands, the inhabitants were a clean-skinned race of people, entirely unaffected with any syphilitic or leprotic taint, and that it was not until after the visits of European vessels that those people became affected with syphilis, and that on account of their social and moral habits the disease spread rapidly, and it was not by the introduction and spread of leprosy, as a separate disease, that the latter became prevalent, but as a sequence of what had become a pretty general syphilization of the native population.

In view of the importance as to whether the bacillus leprae is an independent entity, as it involves the question of quarantine against and separate settlements for the subjects of the disease, the personal liberty of those who are affected and the public expense necessary to guard against the spread of the disease, if infectious, it is a very interesting subject and should be further investigated, and at public expense, especially since

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the present political status of those islands is such as to render more extended and more direct intercourse with this country, than formerly, highly probable; and the present conditions are apparently more favorable for such investigation. This is one of the questions to be referred to the much talked of and long anticipated medical bureau to be established at our national seat of government.

Then again, we now and then have some new beverage or a new article of food placed before the public without any assurance of its wholesomeness or food value, except the unverified statements of interested parties, the most recent example of which is that of the cotton seed oil. Up to the period of the late civil war the oil of the cotton seed had been ignored, but soon "after the war" the manufacture of cotton oil was commenced and its production has become extended so that the figures by which it is furnished to the markets are placed so low that it has been measurably substituted and otherwise taken the place of the different kinds of fats which had theretofore been in use. Recently observing an article of oil in bottles labeled "pure Lucca oil," being sold by grocers of San Francisco at a price equivalent to one dollar per gallon, I had a bottle of it conveyed to the State analyst at Berkeley, who, on analysis, certified that it consisted of cotton seed oil with enough of peanut oil to increase its flavor. Inquiry among the dealers indicated it as a wholesome article of food, and it is so satisfactory to the consumers that large quantities of it are being sold; and yet who has the assurance of its wholesomeness, its readiness of emulsification or food value as compared with the fatty substances which had stood the test of the indefinite past?

But what general advance has ever been made, by any people, except at the instance of some shining example, who was able to enlist a band of enthusiastic followers whose activity and earnestness communicated an impulse to the masses, or since the advent of the founder of the religion of the present civilization, which has become enthused by the example and teachings of the Master, and willing to sacrifice in the interest of the people. It appears to me that the great want of this period is a more extended and more definite knowledge among the people of themselves, the anatomy, physiology and

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requirements of the body, and the external surroundings that affect soundness of health, and by it the development of the mind; and we might naturally look to that profession which claims to furnish the leaders of reform movements to seize upon the latter-day knowledge of science, and of the human wants to perfect themselves, to a greater extent, in this direction, and to associate with themselves such members of the legal profession, as shall see in it, the advantage to their own profession in the advancement and betterment of the State and Federal laws; and both professions, united together with the medical profession, to made an advance movement to enlarge in this direction, the general educational curriculum; and with the greater light, thus developed, will arise a corresponding desire and demand for an authoritative bureau of health, of disease and prevention, at the national capital.

THE OPIUM HABIT AND THE INDIAN AND CHINESE OPIUM TRAFFIC.

There is a subject, which, from a State medical standpoint, is of great importance, of which but little information has been acquired by the medical profession of America, and of which nothing, or almost nothing, is known by the general public, and yet which is of an international character,—the opium smoking habit, and the British Indian and Chinese traffic in that drug.

The sea route to India, and the continent of America, were discovered at about the same time. Previous to 1486, the extent of the African continent southward was unknown. In that year, Bartolemeu Diaz was sent by the Portuguese government, to make explorations along the African Coast. He had got as far southward as the land's end, when there arose a westerly storm, which drove his vessel past the Cape of Good Hope, which was the first passage around the now historic cape, as far as known. Diaz would have prosecuted his discovery further, but his crew became mutinous, and he was obliged to return to Portugal. In 1497, the Portuguese government fitted out an expedition of four vessels, to follow up the discovery of Diaz, the command of which was given to the celebrated mariner, Vasco de Gama. De Gama continued on to the eastward of the Cape of Good Hope, until he had reached the coast of Malibar, and also visited other coast

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points of India. The Portuguese traders immediately thereafter opened up a traffic with the Orient, which became extensive and exceedingly profitable. The Portuguese claimed the exclusive right to the Asiatic trade, by sea, on account of the discovery of the route and their first possession of it; but as the century progressed, the Dutch, who at the period, were enterprising mariners and irrepressible traders, pressed into the trade, notwithstanding, the claims and opposition of the Portuguese.

During the greater part of the sixteenth century, the English respected the claim of the Portuguese, by the Cape of Good Hope route, but near the close of the century, after the failure of several expeditions to discover a northwest passage to Asia, or a northeast passage, the attention of English traders and capitalists had become fixed on the example of the Dutch, and the East India Company was formed in London, and an expedition, consisting of four vessels, fitted out, which arrived in India in the year sixteen hundred and opened a traffic, and the representatives of the company, sent out with the expedition, became humble suppliants for the privilege of establishing factories there. The French had also formed an East India Company, and about the middle of the eighteenth century, its traffic and territorial privileges, in India, were about equal to those of the English, when, at that period, the rivalry between the companies, with the fact of their occupying conterminous territory, had resulted in a state of war, and invasions of each other's territory, defensive warfare and counter invasions followed. The war, for a few years, was carried on with about equal success, on either side, when the British government came to the assistance of the company, which acknowledged its sovereignty, with military forces, naval vessels and able commanders, whilst the power of the French government being nearly paralyzed by the then impending revolution, it was unable to furnish the equivalent assistance to the French company. The French company, for a while, made a gallant defense, but the English company with its additional forces was able to capture position after position of the French company, until in April, 1761, the last French fort had been taken, and their last general in occupancy obliged to retire to France.

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The Dutch, who were in force on the Island of Java, on the decline of the French power in India, had sent, in 1759, an expedition, evidently to enable them to supplant the French, and divide the trade and spoils with the English; but Clive, who at that time was President of the Board of Directors of the company's affairs in the Carnatic division, was not satisfied that the advantages to be gained by the recent successes of the English should be shared with another nation, sent a force, which immediately pounced upon the Dutch army, on its landing, and after being severely defeated, the Dutch expedition was forced to return to Batavia.

And thus, after the expulsion of the French, the British company was left by itself, to the control of the Indian traffic and to prosecute its enterprises in other directions; and it might appear almost incredible, with so small a display of military force, that the company should have been enabled to accomplish its complete subjugation, within so brief a period; but the great body of the people of India had been accustomed to existence, for many centuries, with no thought of earthly affairs whatever, only as each day presented itself to them, to the yielding up of their substance for revenue, and to take hold and perform any service imposed upon them by their rulers without objection, as they knew objection or dissent would be useless, and they were perfectly apathetic as to prospects or changes of rulers; and the vast territory was divided up under the domination of many rulers, as emperors, as kings and nabobs, with the special designations as existing in the Indian language; and these rulers held their positions without any sense of responsibility, only as might be imposed by their relations to the neighboring potentates; and without any aspirations for advancement of their respective countries, or for the improvement of their subjects, their lives being, for the most part, occupied in royal displays, sensual indulgence, or with schemes of rapine, or the acquisition of additional power or territory.

Occasionally an Indian ruler would apply to the English company for assistance against some other native ruler, with whom he was waging war, and the English, ever ready to promote their own interests, if the circumstances appeared favorable, would consent, and the steadiness of the English soldiers,

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their use of artillery, the able planning of their leaders and the courageous and skillful conduct of their officers, insured success to whichever party the English associated themselves with. Then the native princes, ever ready to make promises beyond their means of fulfillment, together with their failure to keep track of the progress of events, on account of which they continued to levy duties on British merchandise and make attempts at enforcement of collection, after the period of such levy and their power of enforcement had passed, and these were fruitful and frequent sources of difficulty, which difficulties were always adjusted according to the English views of right and justice, with the invariable result of additional acquisition on the one side and recession and surrender on the other side, until the time had arrived at which the last native ruler had surrendered, fled the country or abdicated, and the last bit of the old India had become subject to, nominally, or in fact, passed under British domination, and that without any marked convulsion or great display of violence, such as usually attends the radical change of the rule of a vast country.

The two hundred and forty millions of India had been accursed by their rulers. The East India Company and the British Government have returned to them a part, at least, of the results of their labor in the construction of irrigation works, the building of railroads and in other needed improvements and some little in the establishment of schools; and, in a measure realizing the more equitable rule, and the increased kindness of the new management, the people of India have become favorably impressed with the change. The occupation by the British has protected the people of India from the inroads of their barbarous neighbors, and from their internecine strife, and has relieved them of the more burdensome and most unreasonable practices of the native religion; but there is an exception, a very marked exception, to the beneficence of the British rule in India, which should be considered a disgrace to a nation, which has been an important agent in the dissemination of Christianity, of the principles of justice and in the promotion of progress, for the later centuries.

Warren Hastings first went to India, in 1750, at eighteen years of age, to take service with the East India Company, as

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a writer or copyist. He was well qualified, of good habits, industrious and ambitious, and soon achieved a reputation, which put him in the line of promotion, and after having filled many positions, of successively increasing importance and responsibility, on the completion of the conquest, and the consolidation of the different departments in 1774, so that the affairs of the company could be conducted under one head, was elected by the English Directorate, the chief executive officer; and thus Warren Hastings became the first Governor-General of India. In that capacity it was his duty to devise means of revenue and set the wheels of the reconstructed Government in motion.

The opium yielding poppy was grown in India, to a limited extent, and although the use of opium, for other than medicinal purposes, was forbidden by the religion of the country and also by the laws of the native rulers, the edicts of some of the princes, even affixing death as the penalty, enough was indulged in against creed and against law to enable Hastings to see that the production of opium and traffic in it, under the control of the Government, could be made a very profitable business and he set to work, stimulated the production of the poppy plant, supplying any means lacking required for the purpose, established factories for the conversion of the drug into the form for its more popular use, established agencies, and issued licenses for its sale; and so the traffic thereby became an established commerce, subject to the exclusive domination of the Indian Government. In 1785, it became expedient for Hastings to resign the General-Governership, and return to England. Subsequently, when charged with misdemeanors and high crimes in his administration of the affairs of the East India Company, and arraigned for trial, before the House of Lords, the opium traffic being one of the accusations, Warren Hastings defended himself against this charge, by self-justification, and exclaimed that he claimed great credit for the establishment of this source of revenue. The East India Company continued to carry on the opium traffic, and it increased in proportion, up to the time at which the company was superceded by the British Government assuming control of India in 1858. Since that period the same course of production, manufacture and traffic has been pursued by the British Government.

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We can understand something of the results by imagining it possible for our Government to take possession and control of the manufacture and sale of spirituous liquors, and then, instead of endeavoring to suppress the evil of intemperance, were to encourage the use of such beverages for the sake of the revenue to be derived from their manufacture and sale; and yet the subject people of India are obliged to submit to a more ruinous course, as regards themselves, by the British Government, because they are unable to resist the imposition. Individuals in great numbers have been ruined by the use of the drug, and numerous families brought to a state of poverty and misery by it, and whole tribes of people have, such a proportion of them, become victims to the opium habit, that it has had the effect to lessen their manliness of character, to cause national deterioration of moral status and physical and mental capacity, and yet in its greed for revenue, the British Government continues the course, which was first inaugurated by Warren Hastings. Indeed, this cultivation of the poppy, production of opium, manufacture into the smoking article and the traffic therein, is an industry of itself of considerable magnitude, being not only for the India trade, but also for the Chinese trade, and the trade with other countries, wherever it can be disposed of. At the factory at Patna alone, three thousand persons are employed; two hundred British soldiers keep constant guard, and the flag of Great Britain, that flag which the British boast has "braved the battle and the breeze for a thousand years," floats over the establishment, and the manufactured article, which is turned out in the form of balls, has each ball, stamped upon it, the initials of the Empress of India, V. R. & I.

The opium trade with China was also developed under the auspices of Warren Hastings whilst Governor-General. He first sent two ships to Chinese ports, loaded with opium, which he directed to be given away. The following season he sent two more shiploads, which were sold at a low price, and thereafter the price was raised, as the increased appetite created a demand, until the trade became very profitable, although against the Chinese laws, the remonstrances of the Government and the Emperor's imperial and earnest protest. The two wars which have been waged by Great Britain upon

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China, in each instance of which the opium traffic formed a part of the originating cause, accentuate the pertinacity with which the British Government has continued to perpetrate this monstrous imposition upon the Chinese nation.

It is impracticable to present this matter in detail, but the opposition to the traffic manifested by the most loyal subjects of Great Britain, the most intelligent, most thoughtful and most patriotic of her citizens, including some of her best and brightest statesmen, as well as many petitions and remonstrances, from out of the darkness of the more extended limits of the empire furnish, the arguments and the evidences against its past and present maintenance and its future continuance, of which the following is a brief and faithful summary of the more extended indictment. The licensed opium traffic in India and the enforced traffic upon China, is the greatest national sin and the most far-reaching in its consequences perpetrated by any nation of the century. In its quiet but uninterrupted sweep of destruction it has caused, so far as numbers alone are involved, greater loss of human life than has the periodic war spirit, the belligerant moods and the actual collisions, with the sequelæ, so frequently entailed, of interrupted health than has all the warring among the nations. It has increased the aggregate death-rate more than has the sometimes interpretrated providential agencies, or any of the naturally developed infectious epidemic diseases, during the century. It has caused more helplessness and degradation, a wider spread impoverishment, a greater aggregate of suffering and misery than has any other of the agencies of the indulgence of appetite gratification or of sensual pleasure. It has blocked the wheels of progress in the matter of the dissemination of Christian truth and obstructed the advance of civilization more than has any other obstacle.

The people of India and of China, more observant of the hand which proffers the poisoned chalice, and connecting the proffer with the professions of Christianity, regard the whole matter as parts of the same scheme to rob them of their earnings and depress the nation's vitality, and look with disgust upon the claims of kindness and the professions of love, as set forth by the missionaries, and the expressions of disinterestedness as the rankest hypocrisy; and thus the greater part of the

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people feel disposed to reject and oppose the whole thing where permitted to do so.

The claims for the necessity of revenue are not worthy of consideration by a people of as much financial ability as are the English, and in the government of a docile people in a country of the natural opulence of India; and the setting forth the expenditure for schools, a mere pretext to cover the real purpose, the acquisition of the money involved, because by and through this source of revenue the pay of those concerned in the administration of the affairs of the empire are increased thereby, and the opportunities of peculation more frequent and more extended, and the accumulation of private fortunes more rapid and more expanded; and it is the latter consideration and the influence of the class of men concerned which have continued to dominate in Parliament and with the aggregate majority of the ministry, which has continued the perpetuation of this unjust, unhallowed and destructive system. These are hard things to say of a nation whose head citizen is designated Her Most Christian Majesty and Defender of the Faith; but the facts are there and the conditions are there, and to any one who may doubt the strictness of this statement, or think it in any wise exaggerated, if possessing any interest to make it desirable, I would extend invitation to make the investigation for himself, although it requires time and study, the facilities for which are not abundant in America as the literature concerning it is scant and not easy to find, American writers rarely mentioning it, English writers disinclined to even allude to it, and the modern histories of India, so far as I was able to ascertain, entirely ignoring this important matter.

The only work which I was able to find, which treats the subject exhaustively, is a book, "England's Greatest National Sin," written by the Rev. H. H. T. Cleife, an Episcopal clergyman, the rector of an established church. The author exhibits intense loyalty to the British Government and speaks admiringly of the Indian Government in other respects, but conceived it his duty to expose this great sin for the benefit of the British Government and the people of India and of China, and the information of the English people. It is a very rare book in America, but having seen a single copy of it in the

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Mechanics' Institute, and desiring to become possessed of the work, I was unable to find it for sale in San Francisco, neither in New York, but was obliged to obtain the book through the kind offices of a local book-dealer who ordered it through a purchasing agency from the place of its publication in the City of London.

This matter would be a pertinent subject of discourse for those engaged in the dissemination of useful information to the American public. I would further suggest that, as it is obviously of an international character, a convention should be called to consider it, to be participated in by the philanthropically disposed of all nations, and that the place to hold it in to be the British metropolis, as not only the central location of interest in the subject, but also as a focus of civilization and of humanization, with the object of assisting the English sentiment, opposed to its perpetuation, and also of directing general public attention to the demoralizing and devastating evil. And California is the fit locality for the suggestion to emanate from, since we have already suffered not a little from the influence of the corrupting traffic upon our local police force, and the federal, detective and civil service employees, in the matter of the collection of duties, in the importation of the drug, and of the habit, with the immigration from those countries already affected by it.

Much pains has been taken to defend the British Government in its opium traffic, in India and in China, and statements given out, sometimes from pretended scientific sources, that it is not hurtful to the people of those nations. But don't we know better? It is the same old thing, the defense of the greedy and the selfish, which has come down to us from the immemorial past, in their struggle against right and justice, that they may be enabled to continue in their greedy and selfish practices, and should be disregarded.

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Medical Education.

REPORT OF COMMITTEE ON MEDICAL EDUCATION AND MEDICAL LEGISLATION.

By THOMAS ROSS, M. D., Chairman, Sacramento.

Mr. President and Members of the State Medical Society of California:

The two great motives that induce men to write are the love of literary distinction, and hope of literary gain. I am not vain enough to expect the former, nor foolish enough to hope for the latter. My motive in accepting the chairmanship of the Committee on Medical Education and Medical Legislation was simply to contribute my mite to the entertainment of this Society, and thereby to express my appreciation of the indulgent kindness of our esteemed President.

To convince ourselves of the recent evolution of medical education, it is only required of us to look at our medical libraries, when we will observe that many of our books that we studied carefully, and whose erudition we admired, are practically useless to-day, except as indicating the mile stones of progression in medical education.

We can judge of the condition of medical education in the recent past, from the fact that prior to 1880, of forty-three regular medical colleges in the United States, whose diplomas were presented to the Board of Health of the State of Illinois, it was found that qualification for matriculation was exacted by only fourteen. By thirty of the forty-three schools, the degree of M. D. was conferred after two years study, including an attendance on two courses of repetitional lectures. No school in the United States, that I am aware of, required more than three years study at that time (1880).

Contrast this with the present condition of medical education, when the total number of colleges in the United States,

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in January, 1894, was one hundred and thirty-five. Of these, one hundred and thirty-one exact matriculation qualifications, or over ninety-six per cent of the whole number, and the proportion of schools requiring attendance on three or more courses of lectures, prior to graduation, has risen from twenty-six to ninety-six per cent. Generally speaking, the standard of medical education was never before so high in this country as it is to-day, nor were the facilities for instruction more complete, or for teaching more thorough, and still greater improvements are promised in the near future.

As a practical result of medical education in all civilized communities, we are pleased to notice the recognition by the people of the importance of enacting and enforcing at all seaports strict quarantine laws, and that national and State legislatures appropriate large sums of money to protect the public from the danger of the importation of pestilence. The last California legislature made an advanced step in sanitation by making it mandatory on the Boards of Supervisors, in each county in the State, to appoint a county health officer, endowed with authority to abate nuisances, disinfect premises, and, if necessary to protect the public from contagion, to destroy buildings, and to do such other acts as may be necessary to prevent the spread of contagious diseases, or to stamp them out. All this is the result of medical education on the community.

Regarding medical legislation, I am of the opinion that it is useless to attempt to secure any further enactments on medical or sanitary topics until the people are educated in these subjects—first educate the people, then the enactment of laws relating to medicine or sanitation will be easy. Let it be the duty of the secretary of the State Board of Health, and of every health officer in every city, town, or county in this State, to write short plain articles, free from technicalities, for the press weekly, on such subjects as the contagiousness of consumption, the suppression of contagious diseases in man and animals, the evil effects of the pollution of rivers or streams by sewage, the protective virtue of vaccination, the necessity for publicity and isolation of all contagious diseases, and on such other subjects as are calculated to prevent disease, and thereby increase the health and happiness of the com-

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munity. Let it also be the duty of the secretary of the State Board of Health to inform the municipal authorities of their duty in all cases of epidemics of contagious diseases, and to impress upon them the importance of supporting the health officers in the performance of their duties. The people are ignorant in these matters; the best medium to inform them and to mould public opinion is the press.

The great defects in our system of medical education were, in many instances, the lack of requirements in preliminary education, lack of sufficient hospital facilities, too short duration of actual study, and a laxity in the final examinations. The defects have been in a great measure remedied by the Association of American Medical Colleges, which requires three courses of medical instruction, of not less than six months each, in three separate years, a matriculation examination in English composition, in higher arithmetic, algebra, elementary physics, and Latin prose, or a certificate of graduation from a reputable college, or a first class high school. Forty-four colleges have adopted these requirements, and indications promise that within two years a four years' course will be required by more than half of the medical colleges in the United States.

In the latter part of 1894, the editor of the *Journal of the American Medical Association* addressed circulars to the secretaries of the various colleges, requesting them to state their plan of education, length of curriculum, etc., which was generally responded to. Of ninety-two colleges reported, only one had a curriculum of less than three years, and that one (Med. Dept. Univ. Virginia) had two nine months sessions. Fifty-seven had three years graded courses, with sessions varying from five to nine months. Twenty-seven had four years graded courses, with sessions of from four to six months.

From this you will observe the rapid evolution of medical education in this country: the requirements for the degree of M. D. being advanced from a two years' course of repetitional lectures to three yearly courses, and many to four yearly sessions of graded lectures, with a strong tendency in every reputable medical college, to advance its curriculum to a four years' course.

Another evidence of the advancement of medical education

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in this country is, in many States, the complete separation of the medical teacher, whose calling is purely to instruct, from the examiner, whose duty it is to ascertain the results of the teacher's instruction.

There is no doubt that there are too many medical colleges in this country, and that some of them, in their anxiety to secure large classes, do grant diplomas on a very limited medical education, is equally true. These, however, will gradually become extinct, and the really meritorious medical colleges will continue to exist, to improve in their methods of teaching, and also, will keep raising their standard of medical education. Colleges of a low standard will attract that class of medical students whose object is not to secure a good medical education, but diplomas, that they may, at the least expense of time and money, practice their profession.

Great Britain and Germany have *one* medical college to every two million inhabitants; France *one* to every six million three hundred thousand, and our country has *one* to every five hundred thousand. It is estimated that there is in this State *one* physician to every five hundred inhabitants. We have about one hundred and thirty-five colleges where there should be only twenty or thirty. One or two first class schools in each state would be sufficient. The principal obstacle in the way of a general high standard of medical education, is the great number of colleges; nature's law, however, "the survival of the fittest," will ultimately prevail.

The want of a uniform standard by our colleges of literary and medical qualifications to secure the degree of M. D. is the chief reason why we have to suffer the indignity of an American diploma *not* entitling its holder to practice his profession in Europe, while nearly all foreign diplomas are recognized here, and entitle their possessors to practice here under the protection of the law. The required uniformity can be secured by the plan that has been adopted by the Province of Ontario, and that has given general satisfaction for the last twenty-five years, the cardinal points of which are:—First: Each candidate must have submitted to him exactly the same set of questions; Second: The identity of the candidate must not be known to the examiner, and, Third: The examining body must be distinct from the teaching body.

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The adoption of a similar law in every State in the Union would compel all our medical colleges to establish a uniform and a high standard of medical education, because a license to practice depends upon passing the examination of the State Board. The legal requirements now in sixteen States of the Union demand the passing of an examination of State Boards of Medical Examiners. A diploma confers no legal right to practice, and has no legal value, except to give its possessor standing before the Examining Board. These States are Alabama, Arkansas, Florida, Maryland, Minnesota, Mississippi, New Jersey, New York, North Carolina, North Dakota, Pennsylvania, South Dakota, Texas, Utah, Virginia, and Washington.

The number of medical students is gradually and progressively increasing. Thus, in the United States, the percentage of increase in 1893 over the average of the previous years, was 8.9 per cent; in 1894 over 1893, 12.04 per cent; and, in 1894 over the previous years, over 22 per cent. The increase of the ratio of students of medicine is over four times greater than the increase of population. While the population during the decade of 1881 to 1891 increased twenty-four per cent (24.8), the number of newly graduated physicians was over fifty per cent during the same period.

Our ably edited medical journals, the organization of medical societies, and the establishment of post-graduate medical colleges are important factors in the advancement of medical education.

While we have a right to look with pardonable pride on our great medical schools, and praise their successful efforts to raise the standard of medical education in this country, it is with humiliation that we must admit the existence of too many institutions that assume the name of colleges, but which should more properly be designated "diploma mills." The *American Medico-Surgical Bulletin* (Feb. 15th, 1894) states that "Missouri has fourteen of these execrable institutions, and Ohio fifteen." Ohio, therefore, is entitled to wear the "yellow jacket and the three-eyed peacock feather" for being the State in the Union most prolific in medical diploma manufactory institutions, with Missouri a close second. These so-called colleges are not established for the money that is in them, but

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in order that their professors may establish themselves as specialists.

In order to elevate the standard of professional conduct, I would suggest that it be made the duty of one of the professors in each of our medical colleges, to instruct the students in medicine on *medical ethics*, so that they may be imbued with a deep sense of professional honor,—"as the twig is bent so is the tree inclined."

We have reason to congratulate ourselves on the great advancement that has taken place in the past few years in our American medical education, to rejoice at our position to-day, and to be pleased with the strong tendency that is apparent on all sides towards a still higher standard of medical education, more stringent matriculation examinations, longer courses, more thorough instruction, and stricter final examinations.

DISCUSSION.

DR. HENRY GIBBONS, JR., of San Francisco, in opening the discussion, said: Dr. Ross has presented a most instructive paper, and one which illustrates a very gratifying increase in the matter of medical education in the last few years. It will be noticed that this increase has been mainly in the last fifteen or twenty years. Those who have looked back upon the subject will bear in mind that perhaps in the large majority of cases in the last century one course of lectures, and that of four months, was required. At present four years is the time required, and we must increase the number of months in the term to five and six, and in some schools to eight and nine. This should be very gratifying. I have often noticed the fact of the relegation of old books to innocuous desuetude, and it has been a source of some sadness to me to think that some of the old masters should be lost sight of, and it would continue to be a cause of sadness if it were not indicative of the rapid advance in medical matters. Who now consults Meigs, or Ramsbottom, or Bedford in obstetrics? Who ever consults the classical Watson? When I commenced the study of medicine his was almost the only work on practice of medicine. Within the period of a few years some great admirer of Watson published an epitome of his work, which he often reads or refers to. Other works have rapidly superseded these once

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classical and admired writings. Dr. Ross states that a large number of colleges will adopt the four-years' course within a few years. It seems to me that before 1896 the number will be much larger than he anticipates. The Association of Medical Colleges, which consists of 80, adopted the rule that four years should be considered the minimum of requirement, I think to take effect in 1896, or not later than 1897. This does not include the irregular, or at any rate homœopathic colleges and eclectic colleges. All colleges are rapidly coming to the plan of having four-year courses. I do not see, however, how the number of colleges is to be limited. I regret very much that there is not some means of limiting the number of colleges which are being established and which are in existence. I would favor the establishment of a board for examination, which should have the sole privilege of admitting to practice. I would like to call the attention of the Society to one illustration of the beneficial effects of quarantine which has been referred to by Dr. Ross. Prior to twenty years ago small-pox was constantly found in this city, and occasionally it became epidemic, destroying quite a large number of lives, and infecting a much larger number. But quarantine has been the means of preventing the occurrence of any epidemics in this city for twenty years. Occasional cases have crept in through inadvertence. This shows the beneficial effects of quarantine, where steamers are constantly coming in from ports that are infected, or where small-pox is to be found. I like the suggestion made by Dr. Ross, that officers should be elected for the purpose of regularly making reports to the public press. I have noticed that there is a column in the *Youth's Companion*, which comes to my house, to my children, in which some medical topic is discussed every week—some public medical matter, and it struck me as certainly a very wise procedure. Something of the kind might be instituted with regard to the daily press, and some officer detailed to see that it was carried out.

Dr. D. W. Montgomery, of San Francisco: I have had some experience with the Ontario act. I know that it works excellently. I have forgotten now how many years it is since a homœopath has graduated in the schools of Ontario. Almost all the homœopaths in Ontario, and there are very few

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of them, are from this side of the line. They are almost exclusively in the large cities. Of course that obtains there too, but there the fewness in number is very marked. One of the good things in the act, to my mind, was in stating clearly to the public that all medical men had to pass the same anatomical examination. Any lawyer, or any layman, or any person away from medicine altogether knows that anatomy must be the same. The same thing holds for physiology and for chemistry, and right clear through until it comes to medicine. If we would put that before our legislators I am very sure we would have a good chance of getting a law through. Then after the law is passed there is still a danger ahead, and that danger is now working in Ontario; the very small fee that is required of each medical man. I attended the Ontario Medical Association last year, and it was wonderful to hear the growling about the very small fee that the Council required to keep it up. They seemed to forget the vast benefits they got from the working of the law. It is an excellent thing there, and would work well in this State.

DR. GIBBONS, of San Francisco: I would like to endorse Dr. Ross' position, that a lecture or lectures on ethics should be given by some member of the faculty in all the colleges. I think it is a very important matter that students should be instructed in this direction. I don't know whether it is specifically done in the school that I represent, but I recognize the fact that it is a very wise provision, and should be endorsed.

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Surgery.

CANCER OF RECTUM

AND

THE SUPERIORITY OF AMPUTATION OVER THE SO-CALLED CONSERVATIVE METHODS OF TREATMENT OF TUBERCULAR DISEASE, INJURY AND MALFORMATION OF THE LOWER EXTREMITY.

REPORT OF COMMITTEE ON SURGERY.

By R. A. McLEAN, M. D., Chairman, San Francisco.

CANCER OF RECTUM.

Max S. Wolf, native of Germany, age 44; occupation, salesman. His occupation required a standing position the majority of the time. First symptoms were noticed by patient about two years ago, as follows: Had to visit stool seven or eight times daily; had, as he described, "continual bearing down pains" and fullness of rectum. The feces were either ribbon-shaped or soft, generally dark-colored, streaked with blood, and of a very foul odor.

About six months after he consulted a physician, who told him he had piles and suggested an operation. He then consulted Dr. Gallway, whose diagnosis was "malignant stricture of the rectum." Repeated dilations were tried with rectal bougies, the speculum and the fingers, with negative results. An operation was then advised and the patient was referred by Dr. Gallway to my service at the City and County Hospital

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January 3, 1895. Examination showed almost complete obliteration of the rectal canal, caused by a malignant growth.

On January 8, 1895, left inguinal colostomy was performed in the following manner: An incision was made about two inches long, midway between anterior superior spine of ilium and umbilicus, in the direction of the fibers of the external oblique muscle, hoping to employ this muscle as a sphincter. After entering the peritoneal cavity, a loop of the colon was caught up and drawn through the incision and the edges of gut sutured to abdominal wall; silver wire was placed through the meso-colon and held down by adhesive straps to prevent the intestines falling back into the cavity. The wound was dressed with iodoform gauze and bichloride lint. January 11th the loop of intestine was incised and the edges united to the edges of the abdominal wound. The following day he had a passage through the artificial anus.

On February 12, Kraske's operation for the removal of the malignant growth was performed as follows: An incision was made commencing about one inch to the right of the middle of anus and extending to about the middle of the second segment of sacrum. The soft tissues were then dissected back, the tissue on anterior surface of sacrum was dissected back, keeping as close to the bone as possible. The coccyx was removed and the lower two segments of the sacrum were chiseled off obliquely on the right side. The tissue lying over the rectum was carefully dissected back. A strong ligature was placed around the intestine well above the diseased part. Section was then made through the gut immediately below the ligature; the rectum was then raised and dissected away from the underlying tissue and second section made about one inch from margin of anus, the approximal ends of the intestine were then drawn together as near as possible and united with sutures. The cavity was dressed with iodoform and treated as an open wound.

The patient was discharged from the hospital March 30th.

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THE SUPERIORITY OF AMPUTATION OVER THE SO-CALLED CONSERVATIVE METHODS OF TREATMENT OF TUBERCULAR DISEASE, INJURY AND MALFORMATION OF THE LOWER EXTREMITY.

The following remarks are intended to apply only to cases of unusual severity. It is not contended that amputation should be done except in such aggravated examples as offer no prospect of gaining a comfortable degree of activity after iodoform injection, resection, excision, partial amputation, and the use of orthopedic apparatus. To those who see much of the effects of conservative treatment of joint affections and clubfoot, it must be evident that better results would be attained by amputation in many cases which seem to be suitable for milder methods of treatment.

In selecting the method of treatment, the surgeon should be governed by the desire to secure to his patient the greatest degree of activity, and not by the desire to sacrifice only the smallest possible part of the extremity. The modern artificial leg supplies to a wonderful degree the place of the natural extremity, and affords greater activity and comfort than can be obtained by more conservative methods in these cases. Owing to the mechanical perfection of this device, as well as to its unobjectionable appearance, the surgeon is now justified in advising amputation rather than the procedures before referred to.

Amputation through the foot should be restricted to the operations of Lisfranc and Hey. Chopart's amputation should be discarded, owing to the tendency of the anterior surface of the stump to become depressed by the unopposed action of the tendo Achillis in drawing the heel upward. The effect of this displacement is such as to render the adjustment of an artificial foot difficult and unsatisfactory. The sub-astrogaloid amputation and the operation of Pirogoff possess no advantage over that of Syme, and give less space for the mechanism of the joint forming the ankle of the artificial foot. The difficulty of securing motion at the situation of the ankle would also exclude the various modifications of these amputations, as well as the operation known as the osteoplastic resection for disease of the posterior tarsal bones in which the foot is placed in the attitude of extreme talipes equinus by a union

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of the sawn surfaces of the cuboid and schaphoid to the ends of the tibia and fibula.

For the correction of severe forms of talipes varus, the operation of tarsectomy has recently been extensively practiced. In many cases the immediate result appears to be satisfactory, but after a few months there is a great tendency to relapse. The shortening of the foot and stiffening of the ankle and the medio-tarsal joints, render this operation a doubtful substitute for amputation. The atrophied muscles and adherent tendons and fascia, present in the inveterate forms of clubfoot, exclude the possibility of gaining as great a degree of useful activity as would follow amputation through the leg.

In the treatment of extensive tubercular disease of the ankle, amputation offers a speedier cure than resection, and the activity of the patient will certainly be greater than would follow the retention of an anchylosed or insecure joint.

In neglected cases of tubercular disease of the knee-joint, with subluxation backward of the tibia, it is possible to place the leg in extension only after removing a considerable portion of the lower extremity of the femur and head of the tibia. The resulting shortening and anchylosis greatly hamper the activity of the patient. Resection of the knee-joint should be preferred to amputation only in cases confined to synovial membrane and cartilage, and not complicated by extensive disease of the bone or subluxation of the tibia.

In tubercular disease of the hip-joint, excision of the head of the femur, incision and curetting of the synovial sac and cartilage, or tunnelling of the trochanter and neck, will, in cases not far advanced, often effect a cure without resulting in serious impairment of function. Such operations, however, do not meet the requirements in the more severe cases, with numerous sinuses leading to carious bone, involving both the femur and ilium and complicated frequently by perforation of the acetabulum and intrapelvic abscess.

I shall now attempt to point out some of the objections to excision or other conservative operation as a treatment for advanced cases of hip disease.

The usual incision is insufficient to give access to all of the suppurating tissues and its position is not favorable for drain-

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age. The extent of caries of the shaft of the femur necessitates a section usually some distance below the trochanters. It is difficult to deal thoroughly with intrapelvic abscesses and caries of the ilium through the usual incision for exsection. Convalescence is tedious, and suppurating sinuses are almost certain to remain. The remnant of the extremity is unserviceable by reason of its flail-like attachment to the pelvis; or, if bony anchylosis occurs between the femur and pelvis, the excessive shortening necessitates a high patten under the foot. Finally, the prolonged confinement and the difficulty in maintaining asepsis frequently produce complications which prove fatal.

It is in such cases that amputation at the hip is especially indicated. The extensive incisions admit of thorough examination and curetting of all sinuses. The acetabulum is freely exposed, and access is gained to collections of pus within the pelvis and the gouge can be freely used in removing carious portions of the ilium. The change in the condition of the patient after the operation is remarkable. He is free from pain. He sleeps and eats well and is soon convalescent.

It is generally conceded by surgeons that patients suffering from chronic joint disease bear amputation well, if but little blood be lost. Until recently, hip-joint amputation was a bloody operation, but owing to the labors of Wyeth, Senn and others, we now have the means of avoiding hemorrhage almost entirely. In order to get better access to the ilium, I have used the elastic tube in the form of a figure of eight bandage around the thigh and pelvis, crossing the turns of the tube on the crest of the ilium. In thin patients this arrangement of the tube when drawn tight will compress all of the vessels passing from the pelvis to the flaps.

During the past year the clinic at the City and County Hospital has furnished seven cases of amputation at the hip. All except one were cases of tubercular disease. This was originally a case of backward dislocation of the femur. He entered the City and County Hospital several months following the accident, after being treated in the German Hospital, where repeated attempts were made to reduce the dislocation. Reduction was attempted several times after his admision to the City and County Hospital, but without success. He then

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began to have spasms in the dislocated leg, and excision of the displaced head of the femur was done. The wound healed promptly but no improvement resulted. The spasms increased in frequency and severity, and amputation was suggested to the patient. He consented, and in June last the operation was very skillfully performed by Dr. Donald Maclean, of Detroit, then attending the meeting of the American Medical Association in this city. The patient recovered promptly from the operation and now enjoys a far greater degree of activity than would have been possible with the disabled leg. On the same occasion, Dr. Maclean amputated at the hip in another case for tubercular disease. A year before the patient had been operated upon by Dr. J. B. Hamilton, of Chicago, for excision of the head of the femur. The operation wound had never healed, and the patient, when admitted to the City and County Hospital, was much emaciated and suffered continual pain. After the amputation he improved rapidly and is now entirely well.

The other cases, upon which I have operated in this manner, have all presented the same history of continued suppuration and pain after the operation, and all have begun to improve immediately after the operation, followed by recovery and return to activity.

In connection with these cases of amputation, I desire to exhibit a case of paraplegia following a depressed fracture of the lamina of the three lower dorsal vertebræ. The patient would not submit to an operation when first admitted, although it was urged upon him. When he had recovered from the immediate effects of the injury he was sent to the Alms House, where he remained several months. He finally returned to the City and County Hospital, where I removed the posterior arches of the lower three dorsal vertebræ which were pressing upon the cord, but had not lacerated it. The patient recovered promptly from the operation, but was only slightly benefited. He has remained about as you now see him for the past six months. Electricity and massage have been faithfully used but without evident benefit. In this case I venture to suggest that a double amputation through the middle of each thigh would greatly increase the range of activity, and perhaps enable him to engage in some remunerative occupation.

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DISCUSSION.

DR. L. C. LANE, of San Francisco, in opening the discussion, said: I will begin my remarks by congratulating Dr. McLean upon the success of two great operations which he has performed upon his patients, each one of which is very difficult, and in many cases, particularly that of the artificial anus, the work has not terminated so successfully as we see here. Taking up this subject somewhat chronologically, I find that the operation of excising or cutting out the rectum, or a portion of it, for cancer, is a very old one. As early as 1840 there was an operation by Beaumés, of Lyons, France, in which he states that he excised the rectum, and that after nine months he believes the case to be cured. We know to-day, however, that that is hardly time enough to be very sure. In 1843 Denonviliers did the same operation, and he states successfully. He found a great deal of trouble in isolating the rectum from the prostate. These operations are not described very accurately, but I suppose that they were all done from anal end of the rectum. They must have been done so. About the same time a German, Hauser, reports a very remarkable operation, and one which would certainly cope with anything of the present day, namely, a case of cancer of the rectum, in which he excised the anal end (it was in a female); and he also excised a portion of the vagina, which was implicated in the disease. There was perfect recovery, and the woman two years afterwards bore a child, which I think would probably be greater than anything which could be reported in our day. In 1878 the operation was performed and strongly advised by Volkmann. I may say, however, that in our own country we had a great advocate of it, the late R. J. Levis, who introduced an operation, which he thought was original with himself. He performed it, or at least recommended it, and announced it through the press; and he obtained such a notoriety that he was sent for to perform the operation upon a gentleman in this city. That was done, I think, in 1876, upon the brother of Governor Low. The operation of Levis was to make an incision through the lower end of the rectum, immediately inside of the anal end of it, dissect off the parts and pull down the diseased portion, cut it off, and stitch it to the anal orifice. He endeavored to do this

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in the case of Mr. Low, and worked faithfully and hard and under extreme difficulties; he had a great deal of hemorrhage. The patient died a very few hours afterwards, and it led to the unfavorable comment that it would not have been difficult to have found a half dozen men in this city without sending East, who could have finished up the patient as quickly. Levis felt very much mortified, and told me that he would have been glad if he had not had anything to do with the case. However, it was a very unpropitious one, the adhesions were of such a nature that they were very hard to remove.

About the same time the operation was advised by Volkmann, and was performed by him; he announced a number of cases in which it was successfully done. In 1861 Schuh, of Vienna, advised the operation, and particularly when it had not reached the fold of Douglass. At that period all the operators were very fearful of operating when the disease had passed up as far as the peritoneal cavity. Lisfranc advised it also, but only when the index finger could be passed into the rectum and could catch above the part and bring it down; and only in that class of cases would he operate. In 1883 there was a very exhaustive report upon the subject of excision of the rectum for cancer by Piéchaud. He collected from surgical literature 149 cases with 103 recoveries. About the same period Amelung, a German, and Durham, an Englishman, of Guy's Hospital, I believe, rather discouraged the operation. I heard Durham discuss this matter in the Society of American Surgeons some six years ago. He strongly advised the operation of colostomy—that is, an artificial anus, the same as you have seen here, as done in the case of Dr. McLean's patient. In 1885 Lawson, an Englishman, who is a general surgeon, and I believe also works somewhat as a specialist upon the eye, advised rectal excision; and it seems to me that in regard to this outside operation,—that is, excising from behind,—the credit is probably due to Lawson, rather than to Kraske, who has generally the name of having done it first. Lawson, in 1885, reports a case upon which he operated successfully by a horseshoe incision made on the back part of the pelvis, in which he reached in and cut out a part of the coccyx, and succeeded in doing the work successfully, and curing his case.

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About this same time, that is, 1885, 1886 and 1887, there were three or four celebrated German operators, among whom the credit of bringing this operation forward should be equally divided: Bardenhauer, Genzmer, Kocher and Kraske. Bardenhauer and Genzmer claimed, or rather, determined, that opening the peritoneum in these operations from behind, is not very dangerous, which I think is true from some observations which I have made myself. It does not figure as an element of anything like the danger which it was once thought to be. Genzmer reports ten operations by the posterior median incision, and he cured eight of his cases. Bardenhauer advised a posterior median cut, exposing the coccyx and the lower end of the sacrum, and he divides the latter on a level with the third sacral foramen, leaving the sphincter and also portions of the levator ani. But the great credit for this seems to have fallen particularly upon Kraske, who has modified all this work which had previously been done. His operation consists in making a cut to the left of the median line on the left side of the sacrum, splitting or cutting off a portion of the sacrum near the median line, that is, the left portion of it, and removing the coccyx. He did not take out the entirety of the lower end of the sacrum, as is sometimes done now. It is said that the great Sir Astley Cooper, who was a model to all the world of surgeons, never, so his biographer says, performed a great surgical operation without first going into his private dissecting room and refreshing his memory upon the anatomy of the part; and if that were done universally I am very sure that the statistics in regard to mortality would be much improved. Kraske found that in his method, by removing the left side of the sacrum he cut away or destroyed the fourth and fifth sacral nerves, and preserved the third. I have performed that operation and have one successful case. It was also done, and as far as I know first done, in this city by Dr. Cushing. His was a remarkably favorable case. The disease was confined to a very small section.

It is very difficult indeed to get a case where you do not find the disease diffused or implicating the parts about. The great difficulty is in getting in and dissecting out the portion of the rectum where the disease is without destroying the nerves which will maintain the future motion of the parts.

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That is, though you secure continuity of the bowel, which is the great object aimed at in these methods, and though the anus is preserved and the sphincter ani and a portion of the third sphincter, nevertheless, if you cut off the nerves which supply the anal end of the rectum, the patient will have very little power or control of the part, and that was so with my patient. He did not control his feces in a way which was satisfactory to himself. The trouble in regard to cancer here, as well as everywhere else, is that the patient, as a rule, does not know that he or she has it until it is far advanced, and the system of lymphatics in this part of the body is of such a mesh-like character, so inter-communicate, and passing and radiating in every direction, that where the disease has reached to the extent of breaking down, the molecular particles of it are sure to pass into the lymphatic absorbents, and to get beyond your knife. If we could get the cases before we have disintegration or breaking down, we would save more patients. This was fortunately the case with Dr. Cushing, whose patient yet remains perfectly well and has absolute control of the bowels. She has since gained some 40 or 50 pounds, and has lived now, I think, something over two years after the operation. That case illustrated that the operation could be done if we took it early enough, easily and successfully. In my case I am not sure the man is going to remain well. He did, however, get well and go to work, and he gained 40 pounds in weight, but he had some suspicious symptoms in the bladder the last time I saw him, and I fear that the disease will appear higher up in the pelvic region, where it will be beyond the surgeon's knife. The post-pelvic method of reaching the cancerous rectum has lately been further modified by an osteo-plastic procedure, in which the bony structures are uplifted with the soft parts, and afterwards replaced and retained in their normal site. Thus doing, the surgeon, after excising the cancerous portion of the bowel, and by invagination restoring continuity, is able to so close the breach that he leaves but a minimum trace of his work.

DR. G. F. SHIELS, of San Francisco: The point that seems to me of the most interest here is that excellent introduction of the preliminary colotomy, which practically puts the surgeon in the position of being able to rest the rectum, to carry

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away the feces by an artificial anus, and to give him a chance to have a comparatively clean wound. I think that is capital practice, to do the colotomy first, so that all the contents of the bowels may pass away and leave the rectum practically at rest, so that the field of operation may be kept not only clean, but at rest. By performing colotomy you really slow the growth of cancer enormously. Suppose the doctor did not intend to remove the rectum, he at least had taken away the irritation of that cancer, and it seems to grow without irritation to the surrounding parts. I have done this operation several times, with the result that the whole pelvis gradually filled up with a cancerous mass, like a plaster of Paris mould, without producing any very bad symptoms until the very end of the patient's life. In any case I think it is a capital idea, this preliminary colotomy before the operation of removal of the rectum for cancer. One point that has not been mentioned by Dr. Lane is the introduction of the Murphy button in this operation; doing the Kraske operation, removing the sacrum if necessary, and then, instead of using sutures, using the Murphy button. The result of this has been excellent in the hands of not only Dr. Murphy himself, but of Marcy. Marcy went from Boston to Buffalo to do this operation, and did it with a Murphy button, with most excellent results. That will always help the surgeon. It does away with the necessity for the sutures. Suturing is always long and difficult and increases the shock of an operation of that kind.

Dr. C. G. Kenyon, of San Francisco: Statistics show a little less tendency to recurrence in this disease than in removal of malignant disease in other portions of the body, especially in the mammary gland, which has been in my hands a very unfortunate operation. In all my cases it has recurred; whether this was owing to the want of an extensive enough operation or not, I am not able to say. I have had a rather fortunate experience in this operation, having recently had three cases of removal of the rectum, with immediate fortunate results in all. If these cases be seen early, or if that type of disease of an epithelial character occurs in the rectum a little above the anus or within four or five inches of the anus, it is not at all a difficult operation, and did not prove, in the cases on which I operated, too much of a shock to the patient. I

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dilated the anal muscle, and dissected it off the rectum. After passing the sphincter of the anus, it is not at all difficult where there is no infiltration, as there was not in these three cases, to dissect the adjacent tissue off the rectum for an inch or two inches above the diseased tissue. I cut off the rectum, brought it down and stitched it, and then I followed this procedure, which I think was a happy thought: I filled the rectum with lamb's wool, which has a resiliency far before any other preparation, which I hoped would serve the purpose of distending the rectum, and prevent any infiltration of fluid, causing an abscess. Those three cases were evidently very fortunate ones. They all recovered without much inflammatory trouble; in fact, two of the cases, if I remember right, had little or no fever. In one of those cases, however, within about one year, the disease recurred. I attempted again to operate on that man, and he did not leave the hospital. Another of the cases was well for a time, but subsequently died of another disease. So far as malignant disease of the anus was concerned, or any other malignancy, there seemed to have been no recurrence. The other, so far as I know, went away from the State well, and I have not heard anything to lead me to know whether or not there has been any recurrence. I have had no experience where there was an extensive infiltration except in this secondary case, which proved fatal.

DR. O. J. MAYER, of San Francisco: The sphincter should not only be retained, but its function also. If there is a portion of the rectum above the anus so that union can be brought about by bringing down the sigmoid flexure or the upper part of the rectum, it should be imperative. There is an increasing tendency on the part of the mucous membrane to grow lax. Another point in the operation for cancer of the rectum after Kraske's method, is how to retain the coccyx in the lower portion of the sacrum. While evidently these parts do not have a very great significance in the support of the body, they have a great meaning in the support of the rectum. There is sometimes retention of the feces for several days, impaction following, and the patient is unable to empty the rectum. There is apt to be impairment of the sphincter.

DR. W. WINTERBERG, of San Francisco: An operation which I have practised consists in the formation of a flap

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which is formed by an incision in the perineum, which goes in a tolerably large groove around the rectum and unites on both sides behind. The soft tissues, that part of the anus which is not involved and containing the external sphincter, is then dissected out, and the whole flap is turned up. It is then possible to draw down the diseased parts of the rectum, to remove them, and to bring together the mucous membrane. The external sphincter will be preserved, probably, depending more or less upon the extent of the disease. If the disease envelopes some of the pelvic tissues, in which the principal nerves may be embedded, then the control of the bowels will of course be more or less impaired, but under otherwise favorable conditions I think this method will give a very favorable result. I operated in this case about two years ago, and the patient is still alive and has tolerably good control over the bowels. In another case I lost the patient about a year after the operation. He did tolerably well for about six months, when the pelvic tissues became involved, although he did not have the distressing symptoms from which he suffered before the operation.

DR. R. H. PLUMMER, of San Francisco: I remember the case of a surgeon in the east, recently, who says that he has several times made an artificial anus behind, at the point where the coccyx is excised. He resorted to this by reason of the fact that he excised in a certain case so much of the rectum, running so far up towards the sigmoid flexure, that he found it impossible to approximate the two extremities; and inasmuch as the function of that part is sometimes destroyed, as referred to by Dr. Lane, by reason of the destruction of the nervous supply, he thought that this would be a proper method of terminating the operation in many cases, and he found it rather satisfactory. He turned the end of the pulled-down gut outward and made an artificial anus at the point where the coccyx was removed.

DR. D. W. MONTGOMERY, of San Francisco: A case came to the late Dr. Blake about eight years ago, when I first started in practice here. It presented a small tumor, just in reach of the forefinger, on the posterior wall of the rectum, directly opposite or at the point of impingement of a retroverted uterus. There was no breaking down; I don't think

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there was any pain; there was no hemorrhage. The doctor took a piece off of this tumor and gave it to me for examination. The examination showed it to be one of the most malignant cancers in this region, and one that is very prone, early, to form metastases in the liver. The case was seen by several gentlemen in this city, and finally was sent to Dr. Gay, of Boston, to be operated on. The operation was done successfully. The second day after the operation there was a tremendous hemorrhage; she got over that. Healing took place, and I asked Dr. Blake about her shortly before he died; I think it must have been fully four years after the operation. There was no return of the disease, and the woman is perfectly well. That shows that an early operation can be followed by good results. But cancer of the rectum is an exceedingly treacherous disease, and exceedingly liable to return. I think it is very rare when a man gets outside the disease line. There is, however, a reason why the operation should be performed, outside of the fact of the mere extirpation of the disease, and that is the ease it gives the patient by cutting the nerves. I suppose the operation itself is a relief.

DR. D. D. CROWLEY, of Oakland: Some attention has been given this evening to the saving of the sphincter muscles of the anus in cases of cancer of the rectum. It has been my opinion for some time past that it would be better to destroy those muscles, where there is a cancer in the rectum, that are producing this contraction upon the morbid mass. Suppose there is a cancer the size of your finger, or two fingers, within the rectum, and that you cut the sphincters, both internal and external, and the tissues back to the coccyx, and the tissues anteriorly as far as the urethra or the prostate gland, you can remove this mass entirely. Then use the common needle with the eye in the point, so that you can sew up the mucous membrane and catch it with a forceps and withdraw your needle, thereby in that way doing away with carrying the needle entirely through the tissues. The point that I desire to bring before the Society is that the cancerous mass can be removed and the patient may live for several months or years, if the disease is circumscribed. But suppose the entire circumference of the rectum is diseased; I say, then cut away the affected part and draw the rectum down if possible. I do not

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advocate the removal of the sacrum or of the coccyx in performing this operation. If you cannot reach the cancer with the index finger, I would not advise the removal of it. I would advise the operation of colotomy by itself, and mearly treat the disease in a palliative way.

DR. C. G. KUHLMAN, of San Francisco: Secondary infection, or metastasis of the liver, takes place very early. The rectum is very porous, and secondary infection or metastatic processes are of very early occurrence in these cases. Frerichs collected, I think, sixty-eight cases of secondary hepatic carcinoma from primary cancer of the rectum. I feel almost sure that in the course of time Dr. McLean's patient will die from secondary hepatic carcinoma. That seems to be the ultimate history of these cases.

DR. SHIELS, of San Francisco: A boy came into the City and County Hospital, the Polyclinic ward, with hip-joint disease, and at that time excision might have done some good, but the people who were related to him wished to get some $20,000 which he owned, and refused to permit the operation, and let him get gradually worse until at last he consented. He was a veritable shadow, lying in bed, with a couple of bed sores on his back and a generally emaciated appearance, so that it looked as if he might die at any moment. Albumen had made its appearance in his urine, showing that there was a change in his kidneys. I took the responsibility of amputating his leg at the hip-joint, and the boy immediately began to build up, and soon was perfectly healthy. In anything like extensive disease of the hip-joint I think it is far wiser to amputate than to try any method of excision or partial excision, or any other operation. Examination shows that this patient of Dr. McLean who had the injured spine has improved since the operation; that he has improved as much as he will improve; that his bladder was at one time affected and it is not affected now. The lower limbs have been treated in every way known to the surgeon for the purpose of trying to get back their activity, without any success. The result is that he is walking around now with a fairly good thigh and a perfectly useless leg and foot. I think the doctor's suggestion of a double amputation in the middle third of the thigh is

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a capital one, and will give this man a greater usefulness in life.

DR. CROWLEY, of Oakland: I had a patient some three years who had his spine crushed and dislocated. Six weeks after he received this fracture he was brought to the Oakland general hospital, where at that time I was surgeon. He had no control over the bladder or rectum, and complete paralysis of the legs so far as motion is concerned. He suffered intense pain. With the assistance of some of the gentlemen who have been present this afternoon I performed laminectomy of the two last dorsal and the two first lumbar vertebræ, making an incision of six inches over the spine. I produced extension and placed the patient in plaster of Paris, after removing those spinous processes. The wound healed very nicely. I removed part of the sacrum before I finished the case. I closed up this opening, and the patient increased in weight from 115 to 165 and 170 pounds. I had this patient going around on four-wheeled crutches—a crutch with four supports, with wheels under each support, so that he could propel himself along, though he never had the ability to straighten himself up to extend his legs. While the spinal cord itself was injured and partly destroyed, I felt that a certain motion was coming back to those legs, and I said, "Leave those legs upon the patient and let him propel himself the best way he can—put on splints or anything, so as to keep the legs straight." I received letters from time to time last year giving me his weight; he has no sores on his body, and some motion has come back to his legs.

DR. KUHLMAN, of San Francisco: This is without doubt the result of atrophy of the spinal cord. I do not believe that it is progressive in character, inasmuch as improvement has taken place in the bladder. I think that this man should be given a chance. I think that steel braces properly adjusted to those legs would afford him proper means of locomotion upon his natural legs. Every artificial means should be exhausted before we resort to amputation, because the paralytic condition of these limbs may simply be due to the inactivity of the muscles during the long confinement in bed. Perhaps the muscles may improve through use, and in the course of a year or two he may have a pair of good legs. I have seen such

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results before in similar cases where there was almost complete atrophy of the muscles of the legs.

DR. SHIELS, of San Francisco: I believe I am right in stating that this man's muscles in the legs and feet have absolutely refused to react to any stimulant at all; in fact, they are dead.

DR. MAYER, of San Francisco: The prognosis is a great deal better in laminectomy as carried out in the lower part of the spine than in the upper dorsal region. I have at present a case under my care. A man was injured in an elevator accident a year ago. The case was very much neglected, having been in a plaster of Paris cast, for no apparent reason, from the neck down to the toes, resulting in absolute immobility of the lower extremities, and it was necessary to bend the knee with a vertical fracture of the patella. At present the patient is getting along well. He is on crutches for the first time in ten months, and he is able by throwing his leg forward to walk a few steps. The bowel, which at first was completely paralyzed, he has under control, while his bladder, fully paralyzed in the beginning, has not quite recovered. It will hold two or three ounces of urine in two hours. In the mean time, through the urinal which is attached, he will pass from three-quarters of an ounce to one ounce of urine unconsciously. I would emphasize the fact not to wait too long to perform laminectomy, until changes have taken place in the cord that cannot be repaired.

DR. MCLEAN, of San Francisco, in closing, said: The discussion has so completely covered the ground that I hardly think there is much to say. In reference to the cases, I would explain that my reason for performing the preliminary colotomy was that the extent of the growth was so great that it was impossible to get the sphincter above it. It was not possible to ascertain its full extent, and the preliminary colotomy was to give the patient temporary comfort. After the subsidence of the acute symptoms resulting from the operation I examined the cancer and was convinced that it could be removed. The operation of inguinal colotomy is so simple that it adds nothing to the danger, and gives us the means of securing asepsis of the operation wound in the removal of the cancer.

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Regarding the operation of laminectomy my experience has been unsatisfactory to this extent: That while some improvement has followed in every case, there has been nothing like a return of function. In all the cases that I have operated on it is true that a considerable time elapsed after the injury before the operation was done, so that atrophic changes had probably already taken place in the cord. One object of the paper that I read was to bring out the advantage of a well-made artificial leg over the present amputation of the foot.

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CASTRATION FOR THE RELIEF OF PROSTATIC HYPERTROPHY.

By CEPHAS L. BARD, M. D., Ventura.

The investigations of John Hunter, Owen, Griffiths, and others, conducted mainly with the view of ascertaining the physiological use of the prostate gland have definitely determined that it is a *sexual* organ, separate and distinct from, and in no manner functionally connected with, the urinary apparatus. A study of its embryology clearly indicates that whilst the prostate urethra springs with the bladder from the allantois, the gland itself derives its origin from the genital cord surrounding the Wolffian ducts and is quite distinct from the bladder. That it should be regarded as a genital appurtenance is furthermore shown by its absence in the female; that its secreted fluid is essential to the vitality of the spermatozoa; and that it participates in any condition affecting the sexual apparatus.

The experiments of the investigators already mentioned, as well as the later ones of White and Kirby, plainly demonstrate that castration performed on a young animal arrests the development of the prostate and produces atrophy of it in the adult. In these investigations the dog, whose prostate is subject to hypertrophy and other changes similar to those observed in man, was selected. Identical results have been obtained in other animals, but justice to the subject exacts the statement that this unanimity of opinion is not shared in by Greve, a German experimenter, who found that castration in the horse was followed by an *augmentation* of the prostate and vesiculæ seminales equal to a third of their bulk. (Sir James Y. Simpson on Hermaphroditism.)

The intimate connection between the testes and the prostate, aside from their contiguity, is evidenced by the undeveloped state of the latter prior to puberty and the atrophy of both which accompanies old age. It is well established also that eunuchs do not suffer from hypertrophy of the prostate and

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the early lithotomists have been surprised at the diminutive size of the gland encountered in their operations on those who had been deprived of their testes. In the last annual report of the Cooper Medical College mention is made of the case of a man treated in the clinic, aged forty-five years, who, when twenty years old, had mutilated himself by removing one testicle, and from whom its fellow was taken ten years later, on account of a troublesome orchitis. An examination to-day reveals merely traces of the prostate. Furthermore, it has been demonstrated that the removal of one tesicle is followed by an atrophy of the corresponding lobe of the prostate. The close association of these organs is also shown, as stated by Harrison, by the prostatic atrophy which accompanies sterility. It has been noticed also that in certain animals marked changes occur in the prostate corresponding to the presence and absence of the rutting season.

With our present knowledge of the minute physiology of the animal economy, it is idle to speculate as to the cause of these phenomena. They are as little understood as the relation between the utero-ovarian apparatus and the mammary glands; that of the parotid glands and testes; the atrophy of the uterine myomata and the beneficial results in osteo-malacia following oöphorectomy; the subsidence and frequent disappearance of inoperable abdominal tumors as a sequence of a simple exploratory abdominal incision; and the play of other organs as the thyroid gland, supra-renal capsules and pancreas and their mysterious remote effects. Moullin says that as unilateral atrophy of the gland follows the removal of one testicle it is probable that the influence is exerted through the nervous system. Lütkens believes that it is due to the disturbance of nutrition caused by severing the vaso-motor connection which normally exists between these glands.

A marked similarity between prostatic enlargement and uterine fibro-myomata was first pointed out by Velpeau and Sir Henry Thompson. The structure of the uterus and the prostate is closely allied, both being mainly forms of unstriped muscular fibers. Both organs remain undeveloped until puberty and both become atrophied in old age. Towards the close of the period of reproduction each organ is a favorite site for the development of tumors, the character of which is almost

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identical, acquiring a bulk in some cases greater than the organs from which they spring and displaying a tendency to pedunculation.

This analogy is not endorsed by Moullin, recognized as one of the greatest authorities on diseases of the prostate, who states that the histology of the growths does not support it. Uterine growths, he says, are fibro-myomata and have nothing to do with the mucous membrane or the glands which it contains. Hypertrophy of the prostate, on the contrary, is glandular from the first and spreads as an adenomatous growth. Even if a pathological analogy exists, it must be borne in mind that none of an anatomical character can be demonstrated, the homologue of the uterus being not the prostate, but the prostatic utricle which does not participate in hypertrophy of the gland, and that of the prostate is found, when it exists, in the perineum of the female near the lower end of the ducts of Gärtner. Moullin furthermore says that, admitting that hypertrophy of the prostate gland does not bear the same relation to the testes that fibroid disease of the uterus does to the ovaries, there is no proof that although these growths bear the same relation to two different organs that they bear any relation to each other. It should be remarked also that the beneficial therapeutical results of ergot in the treatment of fibro-myomata are not obtained when administered for the relief of an enlarged prostate.

To Prof. White, of the University of Pennsylvania, is due the credit of suggesting that as removal of the ovaries usually results in the decrease, and often the disappearance, of uterine growths, that castration in man might be followed by atrophy of an enlarged prostate gland. After considerable experimenting he gave publicity to his suggestion in 1893, in an address before the American Surgical Association, since which twenty or more operations have been performed and reported by different operators, the results of which have been most satisfactory, some, in fact, being absolutely marvelous. The distinguished originator of the procedure, however, is not entitled to priority in reducing his theory to practice; Ramm, of Norway, being the first to castrate with this definite object in view.

As one-fourth of the recorded cases have occurred in California, it is exceedingly appropriate that the subject should

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receive the attention of this Society. The report of a case in my own practice will serve to elicit a discussion concerning this operation which, in less than two years, has received recognition as, being both rational and legitimate.

George S., a bachelor, aged seventy, applied to me for treatment in 1893. Examination revealed prostatic hypertrophy, the gland being about twice its normal size. Urination was frequent and distressing, but effected without the aid of a catheter. His urine was alkaline, ammoniacal, and loaded down with mucus. The passage of a catheter after urination was followed by a flow of three ounces of residual urine showing the characteristic signs of decomposition. He experienced a sense of fullness in the rectum and had frequent desires to empty it. In addition he presented a beautiful clinical picture of that condition so frequently observed in old men, which, as has been determined lately, is often associated with prostatic hypertrophy, and which some regard as an indication for the operation under discussion. His waist was clasped by an electric belt; his pockets were filled with pamphlets of Liebig, Sweeny, the "returned missionary," and others, and his brain with the delusion that semen was constantly passing away with his urine, and that his ailments were the remote effects of early indiscretion. He had been an easy prey to the quacks and had applied to me for the sole purpose of being castrated. His request denied, he departed, but returned on the same errand two years later. His condition was worse than before. The vesical distress was greater, and he was worn out by sleepless nights. He was now imbued with the ideas of a Hammond, and had bankrupted himself by repeated purchases of spermine and cerebrine. On January 9th of this year, I performed on him double castration, including the complete dissection of the tunica vaginalis of the right side on account of an existing hydrocele of moderate magnitude. A prompt amelioration of his distressing symptoms both physical and psychical ensued. An examination made three months later reveals a prostate reduced to almost its original size. His urine is almost normal; his inclination to urinate is no longer frequent or distressing, and the rectal uneasiness has entirely disappeared. The marvelous rapidity of improvement in this corroborates that of the other recorded cases.

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No other affection contributes so much to the discomfort of man in his declining years as does prostatic hypertrophy. Its existence denies him required and deserved rest by day and by night and precludes the possibility of an euthanasia. All cases of such hypertrophy, however, are not accompanied by vesical or rectal distress. Autopsies have revealed, according to Charcot, a prostate as large as a base-ball which during life had produced no difficulty in urination and no obstruction to the passage of a catheter. In fact, the large majority of men go through life without their attention being called to the hypertrophy which nevertheless exists. That thousands do suffer is also true and have experienced but slight relief from the ordinary methods of treatment in use. Atrophy of the normal gland does occur in old age, but there is no recorded case of any spontaneous diminution in its size when hypertrophied. Sir Henry Thompson states that one man of every three over fifty-four years of age has some enlargement of the prostate; one in every seven some degree of obstruction; and one in fifteen has sufficient hypertrophy to demand treatment. Upon this computation is based the estimate that in this country two hundred thousand suffer from the effects of prostatic hypertrophy. These unfortunates, who for comfort rely upon their catheters as much as they do their canes, will welcome anything which will hold out some promise of cure. Of the other surgical measures prostatectomy presents a forbidding mortality and prostatomy but an annoying relief.

Our acceptance of this novel operation which promises to be another triumph of American surgery, demands a full consideration of the other effects of castration on man. The remote effects of the removal of the ovaries would suggest analogous results from castration and which might possibly furnish contra-indications to its performance.

Prior to puberty castration is followed by a characteristic condition which cannot escape the attention of even the non-professional eye. The appearance of the subject is feminine and his actions effeminate. The muscles are soft and there is a tendency to obesity. The beard does not appear or is arrested in its growth. The larynx does not develop and the voice is puerile. Prior to the accession of Leo XIII, castration performed for the preservation of the soprano voice of boys was

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often resorted to, but the vile practice has been abandoned for many years. Napoleon suppressed the infamous custom in all countries under his domain.

The prevalent interest in the Napoleonic era warrants the narration of an anecdote pertinent to the subject. O'Meara in his "Napoleon in Exile," states that the Emperor, during a conversation, alluded to the making of eunuchs as a practice which to him was most horrid and disgraceful. "I recollect," added he, "an incident with respect to one of those gentry which made me laugh. There was one Crescentini, an excellent singer, who often sang before me and delighted me much. As I wished to encourage merit in every science and as it was his misfortune and not his fault to have been mutilated, I conferred upon him the knighthood of the iron crown. This, however, displeased a great many who said that a *thing* which was not a *man* ought not to have an order for manhood conferred upon him. There was a great discussion about it in which Madame Grassini took a part. Grassini said 'I really think that the Emperor has done right in giving it to him; I think that he deserves it.' Being asked *why*, she replied: 'I think that he merits it if it was only on account of his wounds.' This sally produced the greatest laughter and turned the business completely."

It would seem that no unusual mental change follows castration when performed on the very young. The unimpaired intellectual powers of eunuchs have enabled some to attain stations of honor and trust, and they figure in Eastern history as the peers of princes and the confidants of kings. So much so that in Egypt the term eunuch was often applied to any court official, whether he retained his testes or not.

After puberty and in middle life no physical effects, as described, occur after castration. Usually, as in animals, corpulence is developed and the spare figure displays rotundity. Whilst physical lassitude may ensue it is doubtful that mental vigor is in any way diminished. In the classical case of Abelard and Heloise, the former, when castrated by the irate uncle of the latter, was forty years old and he died at the age of sixty-three, being one of the most famous logicians and theologians that France has produced. Origen, who was born at Alexandria in the year 185, and who, that he might escape

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from the lusts of the flesh, castrated himself when aged nineteen, died at the age of seventy, the most distinguished theologian of the ancient church.

Is a man unsexed at any time of his life by removal of his testes? Denied the ability to procreate his species, his sexual appetite is not absolutely destroyed, and he is able to have erections, connection and even emissions. The death of the famous Velluti, who was the last of the male sopranos created by castration, was directly due to venereal excesses. The Roman matrons safely made use of the castrated for their lustful uses. So well was the fact recognized in some Eastern countries that abolition of the entire external genital organs was demanded, and in consequence every eunuch was obliged to use a catheter to avoid soiling his clothing.

When castration is proposed for the relief of a hypertrophied prostate it is when man's sexual life is in decline or completely ended. At that age, from what has been said, we can expect no resulting effects, physical or mental, which can be regarded as contra-indications to its performance.

Of the other methods of producing prostatic atrophy it can be said, reasoning from analogy, that as the results of the removal of the ovaries for uterine myomata are better than those following ligation of the uterine arteries, the ligation of the internal iliac arteries, which is a most difficult operation, would be inferior to castration. The ligation of the vasa deferentia for the purpose of producing atrophy of the testicles primarily and of the prostate secondarily, has been performed quite a number of times, but with no marked beneficial results.

Castration, with the usual antiseptic precautions, is so easily and safely performed that it is highly probable that it, as it is in the female, will be resorted to unnecessarily and with disappointment. It should be distinctly understood that it can only be regarded as a proper surgical procedure in simple hypertrophy and that it is useless in prostatic abscess, cancer, tuberculosis, and when associated with vesical calculi. In uncomplicated cases, however, if after a thorough trial of enforced rest, hot applications, catheterism and the passage of steel sounds, combined with the usual therapeutical treatment no relief is afforded, the operation might be performed, provided the patient's consent is secured.

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Whilst, for sentimental reasons, the operation may never become popular there can be no doubt, as Prof. White said: "There will be no lack of cases willing to submit to an operation almost painless with a low mortality and followed by no such unpleasant condition as accompanies persistent fistulous tracts, either supra-pubic or perineal, even although the operation carries with it the certainty of sacrificing whatever sexual power has survived the excessive and often intolerable sufferings of such patients."

DISCUSSION.

DR. O. J. MAYER, of San Francisco: It was very properly remarked that the operation does not promise to become very popular, although castration, when done for hypertrophy of the prostate gland, when the sexual inclination is on the decline, is at a time when a man rather inclines to the best relief promised. A short time ago a man had to undergo castration on account of several unsuccessful operations for a plastic operation to restore his scrotum; he suffered so much that he finally was willing to undergo the operation of castration. That was two years and a half ago. I was not there, but I know the man personally, and he now suffers from a disease which may be very properly classified in the category of psycopathia sexualis. He has no testicles, still it seems that the inclination for intercourse is still within him, and he tries to satisfy his imaginary passions in some way. I think there is great scope for reflection whether to subject a man to castration for hypertrophy of the prostate gland. I think if we paid more attention to and tried to perfect the *technique* of prostatectomy we can avoid such a mutilating operation as castration.

DR. G. W. DAVIS, of San Francisco: This is certainly a question of considerable importance, because it is a common affection. I do not doubt that if it were not for the sentimentality connected with it, it would be performed more often. I have had for the last two or three years considerable experience with hypertrophy of the prostate and other affections of it. I have, not more than a block from here, a gentleman now in his 84th year, who is suffering from trouble due to that cause. Some three years ago, when I saw him, it was exceedingly difficult to introduce a catheter. The gland was exceedingly

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hard and evidently very decided in its condition. I used, first, a suppository of iodine, and later, suppositories of tallow and iodoform, together with gradual dilatation by steel sounds, and in a few weeks we had a decided improvement in his condition. A gentleman of that age has no sexual propensities, and he has had none for the last eight or ten years, to his knowledge, and in those cases would castration be of any benefit? If castration, as I understand, is for the purpose of lessening or annihilating the sexual desire, would it be any benefit in a man of his age, or where the desire had been lost? I am rather inclined to the opinion that it would not be of any benefit in that case. Another point that I want to make is the medico-legal aspect of this thing. Fifty-four years is the age stated by author of the paper in which a certain percentage of this hypertrophy occurs. In many cases the desire is not lost until 65 or 70, or perhaps more. I do not care if you get the consent of the patient to perform this operation, after the operation it is quite possible, if not probable, that a suit for damages for malpractice may be instituted, even after the consent of the patient has been gained, and therefore, I think it would be well for anyone who may undertake to make this operation to have that thing thoroughly understood.

DR. T. W. HUNTINGTON, of Sacramento: This is a subject that we could well afford to spend a moment on, as it is one of the coming operations, unquestionably, and it is an operation which promises very much for a class of people who are and have been sufferers for a long time. My instruction upon this subject, and I have looked the matter up somewhat carefully during the past three months, is to the effect that the operation is specially adapted to a class of patients who find it necessary to earn their living—laboring men, whose families depend upon them for their daily bread. To subject these patients to the kind of treatment suggested by the last speaker for the amelioration of their symptoms is practically out of the question. They and their families would starve to death meanwhile. To those patients we can offer from two to four weeks' confinement and a return to their ordinary calling. I feel that in that class of cases particularly, this is a subject which we can take up and discuss with some probability of rendering them a service.

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With regard to the medico-legal aspect of the subject, I realize fully that there may be a danger. I do not think to render such a service as this to a person ordinarily well disposed will incur for the operator sufficient risk that he may not go ahead and adopt the procedure. I stand ready to adopt the method at any time. I wish to add a very interesting matter that was called to my attention in this connection. Dr. Robert F. Weir, of New York, has devised a method of replacing the testes by a celluloid article, and he has a patient now who has worn one or two of them for the past two or three years without any discomfort and for certain reasons. That is a thing that is, perhaps, worthy of consideration. I saw the articles used by Dr. Weir.

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APPENDICITIS.

By J. TAYLOR STEWART, M. D., Los Angeles.

The appendix is an organ of evolutionary and pathological interest. It is a useless rudiment which is a constant menace to the life, health and happiness of its possessor. Undoubtedly, its diseases have the antiquity of man's creation; but not until recently have they been generally recognized, and their importance and pathology understood.

One feels constrained to apologize for bringing before an assembly like this a subject that has been, in the past few years, so frequently and fully discussed, and concerning which it is not hoped to add any new aspect. Recognizing the great frequency with which we are brought in contact with appendical disease, its gravity, its high mortality, the want of unanimity relating to its pathology, dangers and treatment, it must be regarded as one of the most difficult and anxious of clinical problems. We have good reason to believe that, until recent years, thousands of lives were lost from appendicitis under the diagnosis of peritonitis, inflammation of the bowels, etc. We are now as convinced that peritonitis has no existence as an idiopathic affection as we are that appendicitis is the cause of an overwhelming majority of the cases formerly regarded, and now too often diagnosed as peritonitis, and is the cause of nearly all the diseases of the ilio-cœcal region.

The relative anatomical position of the organ, with its unfortunate conformation, renders it the easy victim of disease; being a rudimentary continuation of a dependent portion of intestine, which is a kind of fœcal diverticulum, especially exposed to the effects of constipation and other obstructive causes, with its small and irregular lumen and resentful mucous membrane, the etiology is not difficult to appreciate. Irritation of its lining, with consequent engorgement, may speedily result in occlusion, strangulation and necrosis. Then, trauma is, in its broad sense, the common cause. The traditional grape seed—not often observed, however—and other foreign bodies, the irrita-

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tion of fœcal concretions are traumatic agencies, easily exciting inflammatory action, which is exudative and septic.

The pathology may be dismissed in a few words. We assume that appendical inflammation is always exudative and aseptic; that the bacteria coli commune may be innocuous in the cavity of a healthy peritoneum or brain; but, in the presence of exudative and inflammatory processes, they are patho- and pyogenic. As concerns the appendix, the chain of pathological events is now complete. Septic invasion of its peritoneal covering may result in general peritonitis; or, more commonly, in the production of a limiting wall, shutting off the suppurating, septic and necrosed appendix. A large abscess may be thus walled off by this protective process. We now approach a subject of far greater practical interest. The diagnosis is not unusually a matter of great difficulty, but is occasionally impossible. Certain symptoms are highly denotive of this disease. Pain in the appendical region, localized tenderness on pressure, elevation of temperature, and quickened pulse render a diagnosis probable. The existence of a tumor in addition renders it almost conclusive. Pain in the beginning is not very reliable. It may be erratic, may be anywhere, may be everywhere. Tenderness is a more reliable symptom, but may be absent. All the symptoms may be as perplexing. It has not been my experience to gain information from rectal examination, but it should not be neglected in the more obscure cases.

Whilst none of these symptoms are unequivocal, there is usually but little difficulty in reaching a diagnosis. In rare instances of difficult or impossible diagnosis, with pronounced indications of serious intra-abdominal mischief, no one would hesitate to make a diagnostic incision. Great surgeons have opened the abdomen for the removal of a diseased appendix to find the organ in perfect health. Great surgeons have done celiotomy for tumor and found a gravid uterus or phantom. This cannot be argued against exploratory incision in any serious case where diagnosis is otherwise uncertain or impossible.

It is impossible to determine the prognosis even approximately. It is fair to say the mortality under any plan of treatment is much greater than is generally supposed. Statistics

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are most unreliable, coming from most untrustworthy sources, meager as to information or diagnosis, and direct cause of death. Under medical treatment twelve or fifteen per cent in not too high an estimate of mortality. This, increased by the mortality of appendical cases, reported as peritonitis, etc., must reach fifteen or twenty per cent. The mortality under judicious surgical treatment remains to be shown. There is, in truth, no data for determining from statistics the mortality attending proper surgical management; nor, indeed, can there be until appendicitis, in every stage, shall be regarded a surgical case.

There is no disease in which the pathology more clearly indicates the treatment than appendicitis at the earliest moment at which a diagnosis can be made. It is known that in the peritoneal cavity there is a septic organ, which, at best, is functionless, always dangerous, and now placing our patient in great peril. The removal of the organ involves an operation attended by a very small mortality, and secures to the patient perfect cure and eternal immunity. This same pathology teaches the futility of the orthodox medical treatment, barring a few exceptions; indeed, the ordinary surgical limitations, as extremes of age, serious disease of important organs and so on, appendicitis is a disease demanding simply and only surgical consideration. Medical men and sensible surgeons have been disgusted by the mania for operations evinced by would-be surgeons,—that embryonic class of operators, who, on account of the simplicity of abdominal section, have removed normal, or slightly diseased ovaries, through a morbid desire for surgical distinction, unsexing and mutilating thousands of good women. Here there can be no parallelism; in the one case useful and important organs are wantonly sacrificed; in the other, whether necessary or not, a useless and dangerous appendix. This sinful and disgraceful practice has been somewhat responsible for the too slow growth of appendical surgery.

Assuming that our knowledge of pathology should be our guide in the rational treatment of every disease, it is difficult to appreciate the philosophy of the popular medical treatment of appendicitis. In the matter of anatomy, physiology, and pathology, the appendix is peculiar. For anatomical reasons, it cannot be the subject of simple, harmless, catarrhal conditions as can other regions of the alimentary tract. It is not a vas-

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cular organ, resisting well the invasion of disease and the operations of pathogenic influences and capable of prompt and complete resolution. Pathologists teach us that its mucous membrane at its cœcal extremity is peculiarly vulnerable, and that, on account of this and the anatomic constriction, slight catarrhal conditions must cause at once dangerous stenosis, a condition which does not obtain so readily elsewhere. Admitting the possibility of simple catarrhal appendicitis with perfect resolution, it is doubtful if it often exists, or that we can in any case contemplate it with serenity. It would be wise to ignore such a classification for one reason, at least, that it is impossible, absolutely impossible, for any one to make a diagnosis of catarrhal appendicitis early, if at all; and it is upon this early diagnosis that the hope of minimizing the mortality depends. As to resolution, it is not so complete as some would have us believe. The persistent tenderness and the frequent recurrence of inflammatory attacks do not inspire our confidence. It is rather subsidence and quiescence too often to prove fatal in the end.

Let me here furnish you a case of supposed catarrhal appendicitis. In consultation I saw a gentleman, aged seventy; pulse eighty, temperature normal, and bowels responsive to purgatives. He was free from pain, and tympany not great. Doctor Beebe, who is present, saw this case with me late at night. The reassuring absence of symptoms, his advanced age, late hour of night, absence of facilities for operating, and the misleading opiate caused the delay. Eighteen hours later I opened the abdomen, and evacuated a large quantity of pus, which was free in the peritoneal cavity. Timely operation would probably have saved this life. Two other cases of similar history and sad termination have I seen in the last year.

Another case: A little girl, aged eight. I saw her at noon fever, general abdominal distress, and constipation. The conventional purgative was given with great confidence. On the night of that day I opened her abdomen and removed a large perforated appendix. The operation was done in the presence of a fatal fulminant peritonitis. Is such a course of treatment not advocated by the gentlemen who teach the propriety and reliability of medical treatment, and that we should wait? Was not that child's life probably sacrificed to a mistaken

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pathology, and delayed intervention of surgery? Bear with me while I give you another result of delay.

A medical friend called me up a few days ago to say he had a case of appendicitis. My advice was, operate at once. Two days later I cut open a large appendical abscess. The appendix was as large as my finger, it was a part of the abscess wall, and I did not dare to disturb it. It sloughed away through the ample incision. Think of the imminent and constant peril to life, the severe illness and protracted convalescence. During the last year I have seen several such cases.

Multiplied and disastrous experiences have driven me to the most positive distrust of all medical means of treatment. The recorded experiences and teachings of some of the ablest men in our profession demonstrate to us beyond reasonable doubt that surgery furnishes us with the proper and the best resources in dealing with this very dangerous disease. More advanced surgeons, or more heroic if you please, advocate operating in any case. It is our own views and experiences, enlightened and sustained by those of others, that we are supposed to offer upon such occasions as this. It is not hoped that our views be accepted by everyone; but the experience of every honest and intelligent observer must be recognised as part of the great integral experience which crystallizes into principle and law. For myself, I wish to say that there is not a drug known which is reliable in the medical treatment of appendicitis, and that those in popular use are frequently more harmful than useful, and that the therapy is not consistent with recognized pathology. Out of merciful consideration, we will not allude to the poultice and massage treatment. Salines and other purgatives and enema are admissable only as a preparation for laparotomy, and that in the early stage, estimated not by hours of time, but by the probable condition of the diseased organ. The possibility of evacuating the engorged and probably strangulated appendix, by exciting peristalsis in the neighboring portions of intestine, is not to be entertained; but this peristalsis must account for many cases of leakage; and, in later stages, breaking down of protective barriers. Why advise a man to take a saline and go to bed to rest his appendix? In other parts of the intestinal tract salines do deplete and do evacuate; but here they tend to defeat these objects. Opium, the greatest remedy known, is here

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powerless to do good; and potential for harm, by masking completely the progress of the disease; depriving us of danger signals whilst the most deadly conditions are developing.

Whilst it is true that many cases of appendicitis recover without operation, it is also true that the mortality could be greatly reduced by immediate operation in every case,—an aseptic operation, done by a competent surgeon. The immediate operation involves but little more danger than an exploratory incision, which is comparatively insignificant. Fulminant cases, which would probably die after operation, are the cases in which death would be inevitable without operation. The mild cases, from which spontaneous recovery may with some confidence be expected, are the cases involving the least operative danger, and without operation recurrence must be a constant dread. With the limitations previously alluded to, operate immediately on making a diagnosis of appendicitis. If in doubt, operate. Operate aseptically, rapidly, and through an ample incision. Do not expose the intestines to rough handling or chilling. Terrace the abdominal wound, and 90 per cent will recover, and hernia will be unknown. If called later, when nature has guarded the patient through the perilous stages, and an extra-peritoneal abscess confronts us, we evacuate it through a large incision, we monkey but little with the appendix, pack with gauze, and all such cases recover. If called still later, when perforation has occurred, or the abscess has opened in the peritoneal cavity, open abdomen quickly, without general anæsthesia if possible, irrigate with hot water and drain. Nearly all such cases die.

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DISINFECTION OF THE HANDS.

By HENRY KREUTZMANN, M. D., San Francisco.

When we look back over the medical literature of the last 15 or 20 years we find a steady decrease in mortality from all operations, also from those upon the female genital organs, especially strikirg when the abdominal cavity was opened. A great many reports have been made during that time bearing upon this subject. But now-a-days there is no necessity for such reports; the fact has been established that any number of operations upon the female genital organs can be done with really a "nil-mortality." Certainly women have still to die; they die not because, but notwithstanding, an operation has been performed.

The same progress is found in obstetrical practice. For a long period maternity reports were issued yearly, different antiseptics recommended, various measures considered essential for good results; but to-day we know, or at least we ought to know positively, that women in confinement die only from some uncontrollable disease or from some accident, not only in private practice, but in maternities just as well.

This wonderful progress has been brought about, in my opinion, by two factors. First: Perfection of technique; perfection means mostly simplification. In obstetrics we had to dislearn the polypragmasie in ordinary cases, we had to learn again to let nature alone in the vast majority of physiological deliveries. In gynecological work we know, now, how to handle with success, cases which were not long ago considered inoperable. A little over a decade ago, in '80 and '81, I saw Prof. Zweifel, who succeeded Karl Schroeder at the University of Erlangen, and who is considered one of the most successful operators, refuse operation in more than one case of intraligamentous ovarian cysts; in others the operation would not be finished; at the same period reports of unfinished hysterectomies could be read quite often, certain operative procedures in dealing with such cases were recommended. But at the present

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time an unfinished operation for ovarian cystoma of whatever kind has become something extremely rare. The same progress is found in operation for uterine fibroids, for malignant disease of the uterus, for inflammatory disease of the appendages, for ectopic gestation; not to forget minor details: Trendelenburg posture, the use of gauze for drainage, the closing of the abdominal incision in rows, etc.

The other factor is the introduction of the antiseptic method into surgery and midwifery, the culmination of which is the aseptic method. The logical systematical development of aseptic from antiseptic measures; the construction of this most wonderful building, modern aseptic surgery, is due to the discovery of bacteriology and to the many painstaking tedious works of a great many physicians. Through these bacteriological researches we learned to differentiate the microörganisms, we were informed about the conditions of their life and growth, and how to successfully combat them. It is just the logical building up of aseptical practice upon the basis of systematical investigations which commands our admiration; not empiry, or good luck is it, to which we owe this great result, the talk and teaching of a few shining lights to the contrary notwithstanding.

We know now that the archfiend to life and health in surgical and obstetrical work, infection, comes from outside. The war-cry of modern surgery and midwifery therefore is "sterile!" Everything that comes in contact with a wound must be rendered sterile: instruments, sponges, suture material, dressing, and, most important, the operator's hands. Bacteriology has taught us the means how to sterilize instruments, etc. With heat, dry and moist, and boiling water, we are able to destroy all active germs. But heat as necessary for destroying bacteria cannot be employed in the sterilization of our hands, we have to use antiseptic germicidal agents for the disinfection of our hands as well as of the field of operation.

When the antiseptic era began, the hands of operators were disinfected by immersing and rubbing them in a disinfectant lotion, after having washed them in the usual way with soap and water. Bacteriological researches made by Dr. Kuemmel showed to him, that only a disinfection with a 5 per cent carbolic acid solution freed the hands from germs. Dr. Forster

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found that sublimate in 1 or 2 pro mille solution had the desired effect. Both these physicians dipped their fingers in culture media or worked them therein. With this procedure Prof. Fürbringer was not satisfied; he scraped the space under the nail with a sterilized instrument and inoculated the scrapings. He was thus easily enabled to show that neither Kuemmel's nor Forster's method yielded sterile hands, on the contrary more or less numerous colonies of all kinds of bacteria and cocci were found to be present. Only when the hands were worked for a very long time the cultures became negative, but nobody could stand this disinfection with 5 per cent carbolic acid or 1 or 2 pro mille sublimate without suffering intensely from eczema, rhagades, paræstheses, etc.

Having tried many materials, such as ether, chloroform, and benzine, Fürbringer found in alcohol a suitable liquid to interpose between the washing with soap and water and the disinfection proper. The directions were mechanical cleansing of the nails and washing of the hands in warm water and soap for one minute; immersion in 80 per cent of alcohol for one minute; washing in 3 per cent carbolic acid or 1 or 2 per cent sublimate for one minute. Upon bacteriological researches Fürbringer felt justified in recommending this method as sure and safe to the profession; it certainly has the great advantage of being not harmful to the surgeon and of being practicable, because it does not require too much time.

A few other scientists went to work to control this method; their results, bacteriologically, were not quite as favorable as those obtained by Fürbringer himself. Howard Kelly showed that the genuine Fürbringer method of one minute duration for every step is decidedly illusive; he demonstrated the bacteriological fact that sublimate is inoculated into the culture-media with the scrapings from the fingers, thus preventing the development of bacteria in the cultures. If the sublimate is carefully eliminated cultures will yield bacteria. But this demonstration by Kelly does not seem so very important, since the same inhibiting influence of sublimate is preserved in wounds touched by fingers disinfected after Fürbringer. Howard Kelly's method with permanganate potassium and oxalic acid is positive in rendering the hands sterile; but in my experience it is open to the same objection as Kuemmel's 5 per

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cent carbolic acid disinfection. The saturated solutions render the hands unfit for work.

In this somewhat confused state of affairs much light has been thrown recently through investigations made by Dr. Reinicke in the bacteriological laboratory of the gynecological clinic of Leipzig under the auspices of the chief of the clinic, Prof. Zweifel, who was not satisfied with the rules and regulations of the German text-books for midwives in regard to disinfection of the hands. Reinicke changed the mode of experimentation in so far that he established a standard of infection of the hands in order to have a certain basis for comparison of the different agents and methods. Former researches were made upon hands just as they presented themselves in the daily routine life of physicians and surgeons. Reinicke besides infected his hands with two different bacteria, the very resistant spores of a potato bacillus and with bacillus pyorganeus.

The first series of experimentation were made with hands treated mechanically only: soap (green soap, Schmierseife) and water, worked with a brush; also sterilized white sand and soap. The results were that sterilization was never obtained, no matter how long the rubbing and scrubbing was done.

The next series was with chemical disinfectants. Great care was taken to keep the slightest trace of the disinfectant from the culture media. The hands were washed in soap and water with a brush for five or ten minutes, in the disinfectant for two or five minutes. The experimentations were made with carbolic acids in 3 and 5 per cent solution with bichloride in 1 pro mille solution; with fresh prepared aqua chlorina, with lysol in 1 per cent and trikresol in 1 and 2 per cent solution, respectively. In every instance more or less cultures developed. Trikresol showed the best results, but this agent produced very soon severe eczema.

The same unsatisfactory results were had with the regular Fürbringer method of 3 minutes' duration.

When, however, the time was extended to respectively ten minutes, two minntes and three minutes only very few cultures of the persistent potato bacillus could be developed, otherwise the culture media remained perfectly sterile.

In order to find out the active principle, Reinicke made cultures after each one of the three procedures. The result was

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surprising. After alcohol (2 step.) there was found just the same sterility as after the disinfectant (3 step). Soap and water was used in place of the disinfectant; the result remained the same. A series of experimentations were then made in this way; soap and water for five minutes (instead of ten); alcohol for three minutes (instead of two); soap and water again for two minutes (instead of three); the result was perfect sterility. Furthermore, brushing the hands with alcohol for five minutes resulted likewise in sterility.

Reinicke therefore considers the alcohol as the active principle; it acts not as a germicide, since Koch and Reinicke themselves demonstrated it to be a poor germicide; it softens and loosens the fatty secretions of the skin, in which are imbedded the micro-organisms, and renders them ready to be washed off with any kind of a liquid, be it sterilized water or a disinfectant. He then recommends washing of the hands in very warm water and soap with a brush or Loofah sponge for five minutes, brushing in alcohol (90 per cent) for three to five minutes, washing off with some disinfectant, as reliable and at the same time harmless to the hands.

The very latest publication in this matter is by Professor Ahlfeld; he comes to the following conclusions: The skin of our hands can pretty easily be made sterile; the skin around the nails presents more difficulties. Of great importance for success is the intensity with which disinfection is performed. Alcohol acts decidedly as a germicide.

I have given a somewhat extensive resumé of the most important publications upon disinfection of the hands for two reasons: First, because, notwithstanding some contradiction in minor details, the authors agree with each other on the main issues; secondly, because disinfection of the hands is of the very greatest importance to every physician, not only to the abdominal surgeon.

It seems to me that this great importance is not acknowledged all around by the profession. The reasons are manifold: harm done to the hands by some strong agent; too much time required for the disinfection; the apparent good results of many who do not disinfect at all. A great deal of illusive disinfection is done, such as pouring a few drops of carbolic acid or lysol into the washing water. But we hear too often yet that

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a young woman is taken sick with child-bed fever on the second or third day after delivery of her child, and that she died some time afterwards from some mysterious disease, the correct denomination of which should be preventable septicæmia. We see too many cases yet of pelvic trouble, invaliding the woman for months and years, necessitating grave operative measures, of which the foundation was laid during confinement through hands not properly disinfected.

I consider it the sacred duty of every one who does operative work or who attends to gravid women, even if he has no special indication, to disinfect the hands carefully before touching the patient. More than that, examination of every patient, especially of gynecological ones, must be made with hands properly disinfected. This is my sincere opinion, based upon the study of the bacteriological researches of competent, reliable physicians, and upon my own operative and obstetrical work. I have not made any cultures myself. I am quite aware that these alone are proofs positive, but I think that practical results may be considered "circumstantial evidence."

The method which I employ in disinfecting my hands is Fürbringer's; but I have always spent much more time than "one minute" for every one of its three steps. I find it better to soak the hands in warm soap-water before doing mechanical cleansing with some instruments. I use a towel besides for that purpose, bringing it under and around the nail. For a disinfectant I take solutions of 1 pro mille sublimate, or 3 per cent carbolic acid, or 1 per cent lysol. Permanganate potassium and oxalic acid I still use occasionally, but in weak solutions only, followed by sublimate, 1 pro mille. In this manner I have sterilized my hands time and again during a day, days for days, without any harm to them. Whenever I am called to a woman in confinement I disinfect myself as described before the first examination. In the progress of labor I simply use alcohol or lysol solutions, or water before further examinations. It is but natural that before an abdominal section disinfection is done most thoroughly, if not repeatedly.

To this precaution, I believe, is due that thus far I have been successful in preventing infection in obstetrical practice.

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I will not deny that I keep away from confinements for a few days, when I have examined a case of puerperal septicæmia in consultation, or that I decline to see such a case while waiting upon a parturient or lying-in-woman. In gynecological work it is more difficult to judge in this matter, on account of assistants, instruments, preparation and after-treatment of patients, etc. Only where we have everything under strict personal control, and where all facilities for sterilization are working, perfect results may be expected.

In no case have I ever met with any difficulty in performing the disinfection as described before. Soap and warm water and towels can be had everywhere; so can alcohol, desirably strong, but burning ordinary alcohol will do in emergency cases; sublimate in tablets every physician carries nowadays with him. The time spent in thus disinfecting the hands will be amply paid by the satisfaction felt over the equally good results. Cost of materials cannot play any rôle, when life and health are at stake. No harm whatsoever results to the physician's hands, as I can positively assure.

The requirements for a good remedy (doubly good here, because it is preventive !) that it act *certe, cito et jucunde*, are fulfilled. Nobody then can show cause why disinfection of the hands according to Fürbringer and Reinicke— soap and water, alcohol, disinfectant solution—should not be generally adopted.

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EARLY AND RADICAL OPERATIONS IN CANCER OF THE BREAST, AND A NEW SYMPTOM FOR EARLY DIAGNOSIS.

By OSCAR J. MAYER, M. D., San Francisco.

Though I might apparently be trespassing upon your time in directing your attention to a subject that has of late years been so thoroughly discussed, both in this and in European countries, still I am prompted to direct the consideration of the members of this Society to this subject, because an overwhelmingly large number of general practitioners, even at this day, share in the belief of the laity that cancer is incurable. And this belief is so widespread among general practitioners that in a great number of cases of mammary tumors and carcinoma one finds that all possible and impossible, internal and external, curative measures have been resorted to to induce the swelling to disappear, be it of benign or malignant origin, save the true and proper surgical procedure. Again, not infrequently, when called in for consultation, our hands are bound helpless to our sides by the family physician, who does not see the necessity of operative interference, because either the tumor itself is as yet small, or because the axillary glands have not as yet become involved in the pathological process sufficiently, so as to be discernible by palpation. Should the surgeon of to-day stand idly by, awaiting such developments, while the disease was making rapid invasions, to him, indeed, would Nusbaum's words[1] apply with startling verity: "Cancer is an omnipresent nightmare in the life of the surgeon."

Fortunately, in late years, both the dissecting knife and the microscope have shed much light on this subject, and although the results are still far from what they should be, the fault herein lies, not with the surgeon, but in the fact that only too often does the patient present herself for operation when it is

[1] Die Heilbarkrit des Krebses. München. 1875.

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too late. In an early and radical operation lies the whole secret of success. And to point the truth of this statistics are invaluable, for they alone can attest the relative value of an early operation. Billroth's cases[1], tabulated by v. Winiwarter, show the largest number of recurrences, viz., nearly 82 per cent. These operations were made at a time when the technique was rather imperfect, and these reported cases are full of both regionary and glandular recurrences, showing that in many cases the axilla, which was not cleaned out because there was no visible enlargement, was the subsequent seat of recurrence. If no recurrence occurred after one year had elapsed, Billroth considered the patient cured, whereas Volkmann[2] insists that one must await the lapse of three years, and advocates the thorough removal of the axillary glands in every case where any enlargement of the glands is traceable. Küster[3] afterwards advocated the cleansing out of the axillary contents as the typical operation in amputation of the breast, to be resorted to whether any suspicion of infiltration was entertained or not. Since this typical plan of operation has been almost universally accepted, statistics show far better returns, so that Gross[4], who made an analysis of 1,842 cases, collected from the records of the clinics of Billroth[5], Kœnig[6], Volkmann[7], Rose[8], Socin[9], Küster[10], Heineke[11], Banks[12], Estlander[13], Riedel[14], his own, and those of the Middlessex Hospital, found, on an average, a recurrence in only about 65 per cent of the cases, and that after the expiration of the now accepted "three years' limit."

In the cases where secondary operations became necessary, a great number of recurrences had taken place in or about the scar tissue, which drew attention to a still closer investigation of the causes of such recurrence. Volkmann's clinical observation led him to remove the pectoral fascia, as experience showed that only too often this was the starting point of re-

[1] Beiträge z. Statist. d. Carcinome. Stuttgart. 1878.
[2] Arch. f. kl. Chir. Bd. xxvii.
[3] Verh. d. D. G. f. Chir. Bd. xii.
[4] Am. J. of Med. Sc. 1888.
[5] Beitr. z. Statist. d. Carc. Stuttgart. 1878.
[6] Deut. Zeitschr. f. Chir. Bd. xxv.
[7] Arch. f. klin. Chir. Bd. xxxii.
[8] Deut. Zeitschr. f. Chir. Bd. xiv.
[9] Inaug. Dis. Lausanne. 1880.
[10] Verh. d. D. G. f. Chir. Bd. xii.
[11] Beitr. z. Stat. d. Mammacarc. Erlangen. 1880.
[12] Brit. Med. Journ., Mch. 12, 1887.
[13] Annales de Gynecol., T. xiv et T. xv.
[14] Deut. Zeitschr. f. Chir. Bd. xv.

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currence of the disease in those cases where the gland had been extirpated above the retro-mammary fat and connective tissue; for although the fascia appeared healthy, islets of carcinomatous infiltration had formed on the surface of the fascia without involving the fibers of the muscle itself. In many cases that had even progressed so far that the whole gland had become fixed, the pectoral muscle was found free from invasion.

The most recent researches into the causes of recurrence in cancer of the breast are those found in the classical work of Heidenheim,[1] who thoroughly investigated eighteen specimens removed by Küster. These specimens were fixed and transfixed in such a manner that the anatomical relationship of the component parts was not in the least disturbed in the hardening process. Then hundreds of slides were made from the various parts of the tumor in such a manner as to arrive at a clear understanding of the natural growth and spread of the cancer, with the view of finding the causes of recurrence. The results of these investigations are of most vital importance to the practicing surgeon, and clearly demonstrate that the histology of the morbid process necessarily demands an early radical operation, if the disease is to be thoroughly eradicated.

The results of Heidenheim may be formulated as follows:

1. That the pectoral fascia is extremely thin and its limits very uncertain, so that to dissect it from the muscle without leaving portions of it adhering, is an impossibility. That where fat and areolar tissue is abundant it is well nigh an impossibility.

2. That in thin women the mammary gland is thin, but that in stout women small portions of it adhere to the neighboring fascia and muscle, and consequently that after extirpation of the gland it is very probable that small portions of it will still remain.

3. That it is a positive fact that if the mammary gland contains even a small cancerous nodule, it is diseased throughout its whole extent; that the epithelial cells of the acini and the connective tissue become quickly involved; that the lymphatics of the mamma carry these epithelial cells to some

[1] Verh. d. D. G. f. Chir. Bd. xviij.

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distance; that a frequent cause of recurrence of the disease is due to acini remaining after the extirpation.

4. That in conjunction with blood vessels lymphatic ducts stretch from the glands deep into the retro-mammary fat. In two-thirds of the cases examined cancerous metastases were found in these lymphatic ducts reaching in this manner the pectoral fascia.

5. That the pectoralis major is usually healthy, if the tumor be in no way attached to it; but it is, however, diseased when cancerous nodules are found adherent to its fascia, and also when the body of the tumor is attached to it. Probably the disease is introduced into the muscle through and by the lymphatic ducts.

6. That possibly also the contraction of the pectoral muscle, caused by motion, as well as the lymphatic stream, aids in carrying the infection to the surrounding tissues. That a muscle infected with cancer seems to be diseased in its entirety.

To these facts, gained by careful scientific research, may be added two factors, that *a priori* may appear to be very insignificant, but which clinical experience teaches us to value highly, for neglect to observe them favors a recurrence of cancer.

1. Avoidance of all rough and undue manipulation of the tumor, either before or during the operation.

2. The knife should be sent through perfectly healthy tissue, lest by direct inoculation epithelial cells may be transplanted.

The first observation was thoroughly discussed by Gerster,[1] in his researches on the dissemination of cancer, and finds its explanation in the fact that manipulations act chiefly as massage. The cancerous elements, as it were, are forced through the lymph channels into the neighboring tissues and into distant organs, and the spread of the disease is thus assisted.

An interesting and instructive case that recently came under my observation was that of a lady, aged 41, who had, for more than three years, noticed a lump, about the size of a small egg, in the left breast. As the lump did not grow larger or become smaller, and as she suffered occasionally lancinating pains

[1]Surgical dissemination of cancer. Tr. N. Y. Surg. Soc., 1885.

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therefrom, her friends (?) advised her to have it "massaged" away. Under the hands of a Swedish masseuse, the tumor increased to nearly four times its former size in less than three weeks. When the patient consulted me, about ten weeks after massage had been discontinued, the left breast was nearly half as large again as the right breast, nodulated, soft, doughy, and the axillary glands very prominently swollen, causing bulging of the axilla. The patient had lost thirty-two pounds, and presented unmistakable signs of hepatic and peritoneal metastases, the nodules of the latter being plainly palpable through the thin and flaccid abdominal parietes. I have not seen the patient since, but have no doubt that no surgeon would undertake to operate upon so hopeless a case.

Although we are still searching for the true etiology of cancer that will stand the test of experimental corroboration, we must, however, classify carcinoma as an infectious disease. Clinical experience has shown it to be so; and that it is autoinoculable has been demonstrated upon the living human subject both by von Bergmann and Hahn. From this it must be apparent that we should take every precaution to reduce to a minimum the dangers of recurrence by not carrying our knife through diseased tissues. Several scalpels should be provided; and the tumor and axillary contents should always be removed in one continuous mass, with as large and deep sweeps of the knife as prudence allows, dissecting the glands, not pulling them out by force; ulcerating surfaces should be thoroughly cleaned with the thermo-cautery, and may be covered with a gauze collodion dressing to avoid contaminating the wound during the operation.

With our knowledge thus accumulated, to-day we can safely predict that after an *early radical operation* recurrence will take place in less than 50 per cent of the cases during the "three-year limit." No large tabulated statistics exist of operations *performed within the last six years*, but the reports of Bull,[1] Halsted,[2] von Bergmann,[3] Powers[4] and Dennis,[5] leave no room for choice in the method of operation.

The technique that is, and should be, accepted by most sur-

[1] Med. Rec., Aug. 24, 1894.
[2] Johns Hopkins Hosp. Rep., V. iv.
[3] Eichel Diss. Inaug., Berlin, 1880.
[4] J. of Am. Med. Ass., Mch. 2, '95.
[5] Tr. Am. Surg. Ass., Sept., 1891.

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geons is that set forth in the classical work of Halsted, whom I may also be allowed to quote as to the disposition of the diseased pectoralis major muscle, the removal of which causes no disability. "The pectoralis major muscle, entire or all except its clavicular portion, should be excised in every case of cancer of the breast, because the operator is enabled thereby to remove in one piece all of the suspected tissues." This procedure is certainly a step in the right direction, and not the misguided conservatism of Butlin, found in his otherwise admirable and valuable work,[1] who recommends that not even the axillary contents should be removed unless they are very much involved, asserting that he had never seen any beneficial effect from such removal. Fortunately this pernicious doctrine from the pen of a writer, so influential among his own countrymen, did not produce in English surgeons a feeling hostile to the recent advances made in the treatment of carcinoma of the breast. Lister, Treves and other surgeons, manifestly approve the typical operation.

If such operative procedures are now almost universally accepted by surgeons, what are we to think of an operation wherein a wedge-shaped piece is deliberately taken out of the tumor, permitting well-defined nodules and swollen axillary contents to remain, and the wound thus made then sewed up. Such a case came to my passing attention, wherein the main symptoms that drove the patient to seek relief was pain in the axilla and arm, caused by pressure on the nerves. Not getting the desired relief from this "wonderfully successful operation," the patient journeyed to von Bergmann's clinic to be told, with well-turned sarcasm, that had a little more been taken away from the right and left, and from above and below, she might have been saved a second operation.

Another case, operated upon in a similar way, died eighteen months after the operation from metastases of almost every internal organ, with a large ascites. In this case, whose breasts were largely developed, about one-quarter of the diseased breast had been allowed to remain for "psychical effect" upon the patient, who would have been too grievously affected by the removal of the entire breast.

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[1] Operative Surgery of Malignant Disease. Philadelphia. 1888.

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In the light of such cases, is it not about time to disabuse the public mind on matters of such vital importance, and to remove the Chinese wall and let the daily press, the great public educator, publish the discussions of the medical societies under proper authoritative supervision? If the cancer quack, with his nostrums, can, by all sorts of misrepresentations, mislead a gullible public that takes kindly to anything that promises the avoidance of resort to the knife, even to its certain prejudice, would it not be proper for our public representatives, the Board of Health, to undeceive the public mind as to the dangers of maltreatment and the delay of operation?

I have deliberately cited these synopses of neglected cases, feeling that they are deeply fraught with lessons of positive caution, and will more effectively point the moral of what is not to be done, than any citation of hundreds of cases, successfully operated upon after prescribed methods, possibly could. A tumor in the breast, if only the size of a hazelnut, should receive our immediate attention. If it grows rapidly, it cannot be removed too early. If clinical symptoms bespeak its malignancy, no time should be lost in resorting to the typical operation. Should great doubt exist as to what its diagnosis shows, either aspiration or explorative incision should be resorted to, with a pathologist on hand to make a section on the freezing mikrotome, and to make an immediate examination. The satisfaction derived from such procedure will well repay all trouble. In fact all tissues removed by the surgeon's knife should, as matter of routine practice, be examined under the microscope; in this way alone will our diagnosis be verified and errors that otherwise would not be discovered, be often prevented.

An instructive, as well as illustrative, case was once operated upon by a surgeon of this city. A lady, 36 years of age, presented a growth under the skin of the axillary region; she was urged to have it removed in the surgeon's office, was operated upon, and sent home in a carriage. The wound healed slowly under profuse suppuration after four weeks. She then noticed a swelling of the left breast and a constantly increasing bulging of the axilla. Dreading another operation, she resorted in vain to various liniments and salves. A cancer quack, whom she consulted, urged her to have it removed

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without the use of the knife. The cancer not yielding to his ministrations, she was then treated by "strapping" the tumor with adhesive plaster and with rubber bandages "to see what could be done." Finally, when the growth still kept increasing in size, she sought relief from a reputable surgeon, who performed the typical operation. But his services were sought too late, for the wound had not even healed, when both regionary and local recurrences took place. When I saw the patient, in consultation, all hope had to be abandoned, since there was an immense bulging mass extending from the sternum to the external border of the scapulæ, firmly fixed, compressing the axillary vessels and nerves so as to cause great œdema of the arm, and unbearable suffering from internal metastases. Would a timely microscopical examination of the first excised growth not have indicated what measures were to be adopted, so that by prompt and proper procedure, untold misery could have been prevented, and a different outcome, perhaps, effected?

In the preceding remarks I have not made any attempt to enumerate the various malignant growths in the breast, with which we meet. Allow me only to draw your attention to that growth in aged women, which we recognize as the atrophying scirrhus. Billroth,[1] as well as Gross,[2] at one time recommended that these growths be left alone on account of their slow progress, and furthermore on account of a belief that they were incurable. This belief is erroneous, as even Gross subsequently admitted, after he had the opportunity of collecting more cases. Though scirrhus of the breast is of very slow growth, yet its presence gives rise to metastases, and in this, as in other cancers, early and radical operations are attended with the same beneficent results.

Approaching now the subject matter of a new symptom for early diagnosis, I have no desire to, nor will I, enumerate all or any of the symptoms that are only too well known. Permit me only to ask your consideration for a new symptom which, in many cases, may assist an early differential diagnosis, in view of the importance to be attached to the immobility of a suspected growth in, or involving the whole of the mammary gland. I refer specially to small nodules that

[1] Krankheiten der weibl. Brustdrüsen, Pitha, Billroth.
[2] Am. J. of Med. Sc. 1888.

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are deep-seated in or beneath the parenchyma of the gland. If these growths of carcinoma are examined while the arm hangs loosely in a natural position, they will be found to be quite readily movable, which motion is, however, only *apparent*, being really that of the passive pectoralis major muscles; but let the patient raise her arm at right angles to the body, and instruct her to resist adduction of the arm, and it will at once be noticed that the nodule has only very limited motion, or may be entirely immobile, while the mammary gland is as movable as before. This symptom admits of easy interpretation; the lymphatics, running from the gland towards the pectoral fascia, carry the infectious material there, and cause infiltrations, long before the whole gland is extensively involved. In this way also can we account for axillary enlargement and secondary carcinoma in internal organs, where the growth of the primary nucleus in the breast has attracted hardly more than passing attention on the part of the patient.

The progress of modern surgery has surely been demonstrated in the treatment of cancer of the breast, when we can show that by early and radical surgical interference we cannot only prolong, but render worth living, lives that would otherwise be fraught only with unbearable sufferings. Secondary operations should be resorted to as soon as any recurrence appears, and the disease should not be permitted to make such further progress as would soon bring the case into the category of inoperable cases. Even in this latter class of cases, I would advocate operative interference to relieve pain and œdema of the arm, as well as from the further, and by no means the least important, consideration to assuage the mental suffering of the patient induced by the ever-increasing growth and the penetrating stench usually present in ulcerating neoplasms. The use of injections of cultures of streptococcus erisypelatus in carcinoma of the breast that have not been operated upon, I only make mention of, to express my disapproval of its use, for at present writing there is not one authentic case on record of a cure effected by this means. Even Coley[1] now restricts its use to inoperable sarcomas only, *after* operative measures have been tried and in vain.

In conclusion I would simply say that if by this brief paper,

[1] Med. Rec., Jan. 19, 1895.

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which makes no pretense of dealing with the etiology or symptomology of cancer, or of setting forth the technique of operation, the necessity of early and radical operations in cancer of the breast has been emphasized in your minds, my purpose has been amply fulfilled. Harsh as this treatment may seem, infinitely more beneficent are its results to suffering humanity than those of a well-intending, yet ill-advised conservatism.

DISCUSSION.

DR. D. W. MONTGOMERY, of San Francisco: I certainly agree in what the author has said about the diagnosis of cancer of the breast. Very frequently we cannot tell exactly whether or not a growth is malignant until a microscopic examination is made. Even with a microscopical examination the question may not be entirely settled. When you make a microscopical examination you get more data upon which to work, and that is a thing of manifest consideration in such a grave question as malignancy of the breast. There are many cases of cancer of the breast which simulate an innocent growth clinically. Many cases of innocent tumor of the breast simulate cancer very closely. Then, even in malignant disease of the breast, there is a great deal of difference in the degree of malignancy. Five years ago Dr. Brown had a very interesting case which I had an opportunity of examining. A lady, in looking at herself in the glass, noticed that there was a tumor on the upper segment of each breast—a double tumor—and she went immediately to Dr. Brown, who excised both mammæ. I examined the case and thought at the time that we had to deal with the colloid cancer of the breast, which is, of course, malignant, but it has the reputation of being less malignant than any other cancer of the breast. I gave an exceedingly bad diagnosis, because of the double tumor and the implication of both breasts. I had occasion to exhibit the specimens to the class many times after that, and in many instances I exhibited them as colloid cancer. Each time, though, I was dissatisfied with my own diagnosis. I ran across, in Alviran's book of tumors of the bladder, a description of a kind of sarcoma which contains a connective tissue of ingrowths into the alveoli. These alveoli look very much like the alveoli of epithelioma. On

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going carefully over the case again I came to the conclusion that this was what we had to deal with,—a sarcoma and not a cancer. The case went along without any relapse until a few months ago, and she died a few days since. Now, I made a mistake in diagnosis there, but it is a mistake that I am sure has been made by some of the most eminent pathologists in the world. I am sure that in the so-called benign character of colloid cancer of the breast, the favorable prognosis in those cases, is due to their not being colloid cancer at all, but to their being this form of sarcoma, with these bright spaces in the alveoli. The case is just simply to illustrate the difference of prognosis between cases that are malignant. If you take cases of fibroid of the breast, there is a vast difference between the malignancy there and the malignancy in cancer. Very many of the former never come back again; some of them do return and are called recurrent fibroids. They are equivalent to colloids of the skin, and to those fibromata of the ear occurring after perforation of ear-rings. The malignancy of those fibromata of the ear is simply the malignancy of the colloid. It recurs again after being cut off. A very good instance of that occurred in the practice of Dr. Chismore. A lady had a fibroma of the right lobe of the ear, occurring after perforation for an ear-ring, and it recurred three times after extirpation. The malignancy in this case, however, is very different from the malignancy in cancer. Malignancy of cancer means metastasis as well as recurrence *in loco*, while these colloids usually are malignant only *in loco*. I was interested in another case with Dr. Mayer, which presented every appearance of an innocent tumor. It was hard and circumscribed and easily movable. The skin was easily moved over it, and it was easily movable on the subjacent tissues. There was a slight history of pain, and there was one nodule on the tumor. The tumor was about the size of a walnut. It was taken out, and the most of the tumor was found to be adenoma, but there was a place on the tumor that had already taken on cancerous degeneration. We cannot be sure in any of those cases when there is malignancy that we can get ahead of the infiltration. You cannot see malignancy; you can only say that if certain cells are in a certain position, or have certain characters, that the tumor is probably malignant. The case of Dr. Chismore

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is very interesting with regard to our getting ahead of the malignancy *in loco*, but not being able to head off the malignancy by metastasis. A year ago Dr. Chismore sent me a case of cancer of the penis. The man had a peculiar anatomical arrangement of the penis. The internal surface of the mucous membrane of the prepuce sprang directly from the corona. That made a bad joint; that joint was always breaking. It always had given him trouble. He got a chancre. The chancre left a cicatrix. The cicatrix accentuated the bad joint. A growth appeared on that after a few years that was button-shaped; tapering in the center. This growth was epithelioma. I cut a piece out of it in making the diagnosis. It sprang across the preputial space, and infected the inner surface of the prepuce. The doctor cut out everything in sight. It occurred again on the side of the body of the penis; he cut that out. The glands in both groins were affected, and after a time these were extirpated. It never recurred locally, in the location of first implication, but it implicated one gland after the other until the patient died a few days ago, with a tremendous cauliflower excrescence on the left groin.

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ALTITUDES IN CALIFORNIA IN RELATION TO IMMUNITY TO TUBERCULOSIS.

By J. H. DAVISSON, M. D., Los Angeles.

I am rather distrustful in writing upon this subject after the able articles upon the various phases of Pacific Coast climatology by my predecessors—and the readiness with which the average "tenderfoot" discourses both pro and con upon the climatic conditions of California.

In looking for a climate immune to consumption—if such a climate can be found—an impression prevails that such conditions obtain at high altitudes only. Many climatologists, both native and foreign, send their patients to altitudes of 3,000 to 7,000 feet, regardless of the stage of the disease and associated conditions. Even C. Theodore Williams, of London, says that hæmoptysis is no contra-indication to mountain treatment,—a statement with which my observation and experience are at variance.

Our confrère, Dr. P. C. Remondino, is the most extensive writer of climatology on the Pacific Coast, and his long residence in Southern California, supplemented by his study of the whole subject, has enabled him on many occasions, and in many classical articles and brochures, to present the advantages of the marine climate of California,—especially elucidating the benefits of the lower altitudes of the State,—as health resorts. He has also emphasized the fact that too much stress is placed upon high altitudes in climato-therapy generally.

It has been urged that high altitudes increase the number of red-blood corpuscles in tubercular patients; but this favorable and desirable result is rather dependent upon improved general health, from better digestion and assimilation resulting from a beneficial change of climate and environment, and not alone characteristic of high altitudes.

The varied topography, the long stretch of sea coast extending over ten degrees of latitude, the numerous mountain ranges, the beautiful and fertile valleys, the immense number

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of natural springs of varying temperatures and potencies, the perpetual snows (in the distance), the fine scenery, the southern latitude, with almost perpetual sunshine, with an equable climate and other consequent meteorologic conditions, make California not only a State of the most varied possibilities as a perpetual pleasure resort, but as a perpetual health resort as well.

As yet we have no complete statistics on the influence of altitude and climate upon tubercular diseases in California, and if we could have data as to recoveries, as we now have of deaths, even then climatic effects would appear at a disadvantage in so far as fatalities are concerned, because up to this time, most tubercular patients have come to the Pacific Coast as a dernier resort, after spending the incipient stage of the disease where it developed, at home in a bad climate, and the second stage at some near resort east of the Rockies, or perchance, in a foreign country, and come to California—after failing to recuperate—in the third and last stage.

Tuberculosis was almost unknown among the aborigines or American Indians in California, and also among the native Spanish and Mexicans. Probably only a small per centum of cases of consumption go to Colorado in the incipient stage of the disease—a point always insisted upon by Dr. Denison, the distinguished Rocky Mountain climatologist. If physicians and guardians would advise their patients to come to California while the disease is incipient, and such patients would come to remain, they would be rewarded in good results; then they would not spread the germs of death in their wake or incur the risk of dying away from friends. The reasons for so many deaths from consumption in California, Arizona, New Mexico, Texas, and Colorado are thus explained, and, as already indicated, we have no records of the many recoveries of those who give climate a chance and come before the retrograde changes have too far advanced for even "favorable resistance."

Some would-be climatologists, as Dr. Andrew Davidson and others, have prated about the prevalence of consumption and the high mortality of the disease in California, as if such a condition of affairs did not obtain at every famed health resort on the face of the globe. This state of affairs has its

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analogue in the large number of insane in California—and in like manner a number of would-be alienists ascribe it to the climate—but the fact is that insanity is not essentially indigenous to California, nor due to the climatic conditions or altitudes, but is rather the ultimate end or sequence of mental, moral, financial, and physical wrecks, many of whom come because of their neurotic conditions which had a beginning in the East and in foreign countries—a large proportion of whom are paupers and dissipated in habits—and the further fact that in California we lock up the insane, whereas in the East and in many foreign countries, they are at large. In Egypt, with a population of about 6,000,000, they have only 250 incarcerated, while in New York State, with 6,000,000 people, there are 15,000 insane in asylums and still a large number unaccounted for.

By way of corroborative evidence permit me to relate a fact brought out recently by an official visit to one of our new insane asylums (within the year). Of the 200 inmates but four were able to pay the $45.00 per quarter as required by law for pay patients. Many of our insane have an asylum record before coming to California, and insanity is essentially incurable.

The lower altitudes of California include the most productive and most populous sections of the State, both north and south, and are most beneficial in nervous and cardiac diseases and all forms of innutrition, including tuberculosis, and are not enervating nor excitant to the nervous system as the higher altitudes of New Mexico and Colorado and the higher resorts of Switzerland and other foreign countries.

Here again the climatic effects are in contrast with the Riviera, although the latitude, topography, and surroundings serve to make a semi-tropic climate in many respects similar—yet the marine climate of the lower levels of California is devoid of the chill and exciting qualities of the climate of the Riviera due to the mistral and bise, so objectionable to nervous and delicate patients. The marine climates of Santa Barbara, Los Angeles, and San Diego, though differing in minor details, like other points on the shores of the Pacific are tranquilizing and relieve insomnia, while the climate of

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the shores of the Mediterranean near the Maritime Alps is exciting and serves to disturb sleep in neurotic patients.

With your indulgence I quote a few lines from my paper upon Restriction of Tuberculosis before the Section of State Medicine of the American Medical Association, 1894: "The question of altitude in the treatment of tubercular consumption is in great measure determined by locality or country and peculiarities of topography, meteorologic conditions and climate. Tranquility of the nervous centers, with consequent refreshing sleep, together with the absence of cardiac disturbances and lessened tendency to hemorrhages, commend the relatively lower altitudes in California, and many other climates in this country. Barring disturbances of the nervous and circulatory systems, the higher altitudes of the Rocky Mountains, so ably set forth by Dr. Denison, of Denver, in many articles and reports, form notable exceptions to this rule. While in Europe many of the best climatologists regard altitudes below 4,000 feet as only preparatory to higher altitudes, as does Dr. Denison, and secure the best results at from 4,000 to 6,000 feet or more."

In corroboration allow me to quote from Dr. S. Jaccond's original article in the *Medical Week*, March 9th, 1894, as follows: "Undoubtedly by reason of its location both toward the north and east, the climate of Gorbersdorf, Brehmer's admirable creation in Silesia, in spite of its low elevation (1,827 feet), is closely analogous to the conditions prevailing in Switzerland at a height of 4,200 to 4,600 feet, and the tonic action is in every respect similar."

The earlier climatologists advocated high altitudes in the treatment of phthisis in all stages and conditions, but the investigations of atmospheric germs by Prof. Tyndall opened up a new field of thought, which, together with the discovery of the bacillus tuberculosis by Koch, revolutionized views of etiology and climatic treatment. Tyndall demonstrated the fact that the absence or paucity of bacteria in mountainous districts was largely the cause of the salutary effect of high altitudes; and further investigation on the same lines demonstrated the absence of germ life in mid-ocean, on the islands and in virgin soil in marine climates generally.

Dr. Geo. M. Kober, of the United States army, at Fort Bid-

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well, California, in a paper before the California State Sanitary Convention (1894), shows that elevation affording immunity to consumption differs in different zones, and concludes that immunity is not alone due to diminished atmospheric pressure or altitude (as formerly believed), but is in great part due to the absence of bacteria at elevations in the country and in marine climates; and in confirmation gives Bowdin's statistics showing deaths from consumption in the English army as 10.7 per 1,000 as against 1.76 per 1,000 in the English navy.

High altitudes are manifestly contra-indicated in nervous patients, in cardiac diseases, in the aged, in advanced tuberculosis, in febrile cases, in hemorrhagic cases, and in laryngeal tuberculosis—all of whom do well in the marine climate of California at low altitudes. If high altitudes are indicated as in incipient phthisis and convalescence from acute diseases as pneumonias, la grippe, etc., and in delicate patients who lack innate immunity to tuberculosis, altitudes from 4,000 to 7,000 feet or more are common to both northern and southern California among the pines, in fine climatic conditions, with all the advantages of fine scenery, dry soil, fine mineral springs, and other natural advantages in aseptic air or almost entire absence of bacteria and almost perpetual sunshine.

A careful survey of California will reveal to the investigator all the variety of the higher planes to be found in Arizona, New Mexico, Colorado, of the favored mountain resorts of Europe; in addition to the great area of marine climate of varied elevations in a dry soil of disintegrated granite; or sandy soil or drift of marine origin. You may choose from such an endless variety of associated conditions, that you can, within the State, find suitable habitat for almost every diseased condition or idiosyncrasy. In altitude you may go from sea level to any required height conducive to health, or from sea level even 350 feet below, in fine aseptic, almost rainless climate—as on the Colorado Desert near Indio, and in the Cahuilla Valley, with warm dry tonic ozonized air and perpetual sunshine—including all essential meteorologic conditions so much sought after in high altitudes, without the exciting qualities and disturbances of the nervous system, as insomnia and cardiac irregularities of higher altitudes, with a rain-fall of not more than 2.50 inches per annum.

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Marine climates are more or less humid, but the humidity or ocean fogs are not objectionable to many persons in the non-malarial warm climates as many believe. The southern end of the State in particular, is warm and has a light rain-fall, which comes in a few rains throughout the year, mostly in winter and at night, and the occasional ocean fogs near the coast are refreshing.

The marine climates of California, including its craggy islands near the coast, are in many respects, similar to the climate of the Sandwich Islands; and in variety of conditions very like the Islands of Jamaica and others of the West Indies—all of which are held in favor for their beneficial effects in lung diseases. Dr. Remondino has shown that an occasional desert breeze brings with it lessened humidity, and the very few days of hottest weather are thus less humid and hence not oppressive.

To recapitulate: The topography of California is such that the warm Pacific with its Japanese current on the west, the sub-tropic relations to the south, the warm and dry desert to the east—principally shut off by the Sierra Nevadas—and bounded on the north by lofty mountains for the most part, coupled with a dry sandy soil, fine scenery, equable climate, and almost perpetual sunshine, constitute an ideal home for the invalid,—a natural sanitarium for pulmonic diseases.

DISCUSSION.

Dr. R. F. Rooney, of Auburn, in opening the discussion said: The laws of climatology and climate therapy have been well studied within the past quarter of a century. The fact that mountain air is better than the air of the lower levels has been very well demonstrated, and has been almost universally accepted by the profession. I see that the author rather claims that the air of the lower levels is equally as good as that of higher parts, but the percentage of mountaineers affected by disease is certainly very much less than amongst those living at lower levels. This is probably due to the atmospheric pressure, although other factors also exert a marked influence. Atmospheric pressure is greatest between the latitudes of 30° and 40° north or south. This is probably due to the overlapping of the equatorial and polar currents. It is exactly in

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these latitudes that we find the largest percentage of cases of phthisis. Whether it is due to this greater pressure or not is somewhat undetermined. The pressure, at sea level is about one and one-half times as dense as at 10,000 feet above. Another great factor in altitude is the electrical force. Of course the electrical conditions of the air are positive, and those in the earth are negative. In the higher levels of the atmosphere the electrical force is very much greater, and for this reason it is supposed that it exerts a more important influence upon phthisical patients than at lower levels where the electrical force is less. Again, there is a very much greater amount of allotropic oxygen in mountain air, but there is a great variation in its amounts in different localities having the same altitude. A full exposure to the light and heat of the sun increases this element, and hence locality must be studied, no matter where we go. The soil of the mountains is generally loose and sandy, which is also a very great advantage over that of the valleys, which is mostly clay and heavy loam soil. There is a minimum of clouds in the mountains and no fogs, so that the rays of the sun are not intercepted except in stormy weather. In the mountains there is less decomposing vegetable matter. Dr. Davisson claims that this is not the case, but it can be readily proved that in the Hawaiian Islands, where the atmosphere ought to be almost pure, as they are surrounded by vast wastes of water, the conditions are especially unfavorable for consumptives, although it is not known generally to medical men. Medical men all over the United States are yet sending their patients to Honolulu and other parts of the Hawaiian Islands with the expectation of their receiving benefit from the pure atmosphere in cases of consumption, and the physicians in those islands ask us, "For God's sake, why do you send your phthisical patients to us? They die here invariably." In the mountains there is the additional aid to phthisical patients of the antiseptic resinous emanations of the coniferæ, which cut a very large figure. Emanations from human lungs are particularly obnoxious. Nearly every man is particular about his drinking water, but pays no attention to the air he breathes. What would we think of a man who drank water with which a diphtheritic patient had just gargled his throat; and yet, in fact, it is no worse

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than to breathe the air that the consumptive has just thrown out of his lungs. The number of cases of phthisis that have originated among the native-born of the town of Auburn, with about 2,500 inhabitants, lying at an altitude of 1,300 feet in the Sierras, during the last fifteen years, was five. Out of those five, three were persons engaged in the official service of the county, and who worked in a building, in the basement of which is the county jail. This often contains twenty or thirty unwashed and diseased prisoners, and the whole building reeks with their emanations. The court-house is an old-fashioned, brick building, erected in 1850 or 1851, and sanitary precautions were not taken in those days, so that it is a very unhealthy building, and it is no wonder that these three young men fell victims. Of the other two cases, one, a young lady, 18 years of age, was not born of phthisical parents. She came in contact with the disease while helping to nurse her brother-in-law, one of the young men who contracted the disease in this old building. But people will go on living in just such an atmosphere as unconcernedly as though they had never heard of consumption. Even in the best localities in the mountains I consider it is dangerous to the well to crowd the sick into hotels and sanitariums. The germs live for years, as has been proved by recent investigations, and are brought to the surface of cemeteries and carried off by the winter rains to contaminate our water supply. Medical men, generally, appreciate the doctrine of the contagiousness of consumption, although I understand that some medical men still deny this. Physicians should make cremation their shibboleth until it becomes a universal custom. I believe that in cremation lies one of the great powers that we have of obliterating, or rather ameliorating, the effects of this disease.

DR. C. G. KUHLMAN, of San Francisco: A good many statements have been made to-day that are not borne out by scientific investigations. We have absolutely no knowledge as to the origin of tuberculosis; it is all conjecture. There is no literature, either ancient or modern, that gives any light whatsoever as to its origin. We know it affects all races alike. It is found in every clime. Recent investigations in Greenland showed tuberculosis extensively disseminated there, showing

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that it must have existed for centuries in a climate most unfavorable to the origin and propagation of so-called germs. The same fact is true of Finland, Sweden and Norway, which, as you know, have a rocky coast. It also prevails extensively among the colored races, and is a common disease among negroes. I cannot accept the theory primarily that germs either cause or influence the course or duration of this disease.

DR. J. H. STALLARD, of San Francisco: I have always understood that altitude had a very great influence upon the prevalence of phthisis, and that there are altitudes in the Andes where the disease is unknown. Certainly it is less prevalent in certain characters of atmosphere—that which is high and dry. The conditions for the propagation of phthisis are tolerably well-known, and no disease with which we have to deal is more amenable to the sanitary conditions and surroundings of the people. I have already spoken several times upon this subject before this Society. I remember the time in my native town when between 400 and 500 people in every 100,000 of the population died annually from phthisis. Enormous expenditures took place for sanitary and other improvements and the organization of a sanitary authority. Great improvements took place, and after the expenditure of some £30,000 in sewers alone, the mortality from phthisis went down to something like 317 in each 100,000 of population. Wonderful improvements have gone on, and the condition of the people has changed, and I believe the mortality from phthisis is now reduced to something like 200 per 100,000. I think by directing our attention to the general principles of sanitation and of good food and clothing, and improvement in the condition of the houses, the ventilation of our rooms, the organization of our factories and the regulation of the hours of labor we can exert a more direct influence upon the prevalence of consumption than either mountain air or climate of any description that I know of.

DR. DAVISSON, of Los Angeles: Probably the fatality of tuberculosis in the Hawaiian Islands, as in California, is due to the fact that patients go there in the third stage. It is so far away from the populous centers that we rarely see patients in the incipient stages of the disease, and those in the third

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stage die wherever they go. The point that I wished to make was this: Not that I advocated the sea level or below sea level as the ideal place for tubercular patients, but I desired to contrast the effect of the lower levels with the higher altitudes, and if I did not make it plain, I desire to say that my own experience in altitude is that there are other conditions that cut a figure. It is not the mere elevation below or above sea level. My best results have been attained at altitudes of about 2,000 feet. This is also true in regard to the late Dr. Loomis' results. He has attained the best results on an average at about 1,800 to 2,000 feet. When I spoke of the lower levels in California I did not intend to convey the idea that I meant necessarily at sea level or below it, but altitudes and places such as Dr. Rooney has mentioned, and localities above that, as contrasted with altitudes of say 5,000 or 6,000, or even 7,000 feet.

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THE MEDICAL TOPOGRAPHY OF NORTHERN CALIFORNIA.

SOME THEORETICAL AND PRACTICAL IDEAS ON THE MEDICAL TOPOGRAPHY OF THE MOUNTAIN REGIONS OF CALIFORNIA, MORE ESPECIALLY THE NORTHERN PORTION

By B. M. GILL, M. D., Dunsmuir.

A good definition of climatology is the proper study of climate in different portions of the earth and at various altitudes, latitudes and locations with special reference to its effect on man.

The State Medical Society undertakes to disseminate information of a scientific character on this subject in order that an accurate and clear conception of the whole State may be made so plain to the world that none may be misled and yet all have access to facts that will help the general practitioner as well as the intelligent laity to ascertain if those who are sick, or predisposed to be, can be benefited by a temporary or permanent location at any given locality.

While each portion of the State has its varied attractions and peculiar advantages this paper will deal especially with the scientific and practical adaptability of Northern California as a health resort as well as a place of residence. If we claim that our State, or any portion of it, has any especial advantages over other States as a health resort or place of residence for any one particular class of invalids or any person having conditions inherent or acquired, rendering them more liable to disease, we must accompany these claims with such facts and representations as will be convincing to the most skeptical.

Now that the various germ theories have obtained such a fixed footing, the question presents itself to the thoughtful man, where can I reside that the conditions so far as any germ infection is possible may be minimized?

The mountain regions of our State, sloping largely to the

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westward, present a very desirable place of residence for Eastern people for obvious reasons. A great number of days of sunlight during the year; constant supplies of pure water, as well as a large number of springs of medicinal waters, scattered all over the hills and mountain regions of the State; a porous and largely alluvial soil, with little variation of temperature from day to day.

The reason why more sunlight is preferable is that, according to the best observers, there is less depression of spirits, more energy, better digestion, better elimination of waste, less tendency to fevers, with a drier air. All of which tend to diminish germ growth.

At the same time that the sun shines so much the continued warmth is keeping the earth's surface warm for a greater length of time. Owing to the continuous warmth of summer and fall there is not so much disturbance of atmosphere as in localities where there are frequent changes of temperature.

The large forests of timber in the mountain regions tend to equalize the evaporation of moisture, keeping up a more equal humidity, thus making a better mean temperature for certain seasons and adding largely to the number of days in which outdoor exercise may be possible to all.

Sunlight and heat being destroyers of the first magnitude for certain low micro-örganisms it must be obvious that where these conditions exist, together with other things that render life tolerable, is for the invalid of low vitality a favorable place for greater longevity.

The volcanic nature of much of the soil of the Sierras and the various spurs and ranges extending largely to the Coast Range in the extreme north, make it possible that the water should be thoroughly filtered through such material as to render it very pure and free from organic matter, and the small amount of earth solids diminish the tendency to renal and vesical deposits and concretion so common to many localities.

The poverty of the soil over large areas lessens the possibility of rapid and luxuriant plant growth, hence no great amount or decomposition of organic matter can contaminate the soil, thereby rendering the springs, which are innumerable, almost free from organic impurities. The steep and rugged surface of this country precludes the possibility of

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standing water or swampy land. Fogs and mists are rare and for many months every year a high barometer continues with regularity, and the average humidity is far less than the coast of many of the Eastern States.

The altitude and latitude combine to make a happy mean so far as barometric pressure is concerned, as well as to give such a degree of cold that invalids may get the best tonic effect, thus avoiding the debilitating condition of heat or the chilling results of cold.

The deteriorating effect on animal life of darkness will prove even to the careless thinker, that a region where a great per cent of light both day and night prevail, must be preferable to persons of weak and debilitated constitutions. The long season of cloudless skies with the attending sunshine and bright nights of Northern California constitute an important link in the chain of evidence.

The depressing influence on the mental condition of people inclined to melancholy is thus largely avoided, while the curative effect upon those convalescent from illness receives a grateful addition.

Evergreen forests impart medicinal principles to the air which are pleasant and possess antiseptic properties, adding to the interest, while the conditions thus far enumerated all combine to equalize the electrical phenomena and keep a more regular equilibrium established of that important factor.

Having thus briefly outlined some of the features and topographical conditions of this region, let us now turn our thoughts towards some of the leading diseases or pathological changes that may apply to the white race in this locality.

It is observable that a large percentage of people who suffer from various throat troubles not malignant, nor of an advanced tuberculous nature, are benefited and often seem to become permanently cured. While catarrhal bronchitis, under intelligent medical advice makes rapid improvement. It is always best to have the advice, and frequently the added treatment of a reputable physician for such invalids, as improper treatment will nullify the effect of the best climate on earth.

Phthisis is almost unknown except the disease is present before the individual arrives, and for reasons already stated this disease will often be held in abeyance or seem to be per-

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manently cured. The mountain regions of Northern California afford many instances of people who claim to have been cured of consumption by residing here.

The almost total absence of fog makes this region very desirable for the asthmatic. No cases are on record of the origin of asthma in Northern California, while all who are suffering from true uncomplicated asthma are benefited. Every one so afflicted should on their arrival consult a competent medical man and every physician so consulted should thoroughly investigate such cases, that no error of diagnosis should occur, so that cardiac and nephritic complications do not go unobserved. All practitioners who have had any length of experience in this part of our State know that pure asthma is nearly always benefited by continued residence, hence a hasty examination would frequently cause the patient to be misled.

Nervous diseases are greatly improved. The absence of noxious insects of all kinds renders life much more tolerable to persons of nervous temperaments. The overworked mother, or if not overworked, but yet suffering from the fatigue of all the responsibilities of wifehood and motherhood, coupled with the continued care of the home and the demands of society, finds in this region a resting and recuperating place almost unequaled. Here, having left behind their various responsibilities, they can, aided by nature's best efforts, rapidly recover lost vitality and wasted strength. Pillows of pine needles; air laden with balsamic odors; water pure as ever distilled; quiet nights and restful days will, coupled with the watchful care of an honest physician, almost invariably restore the neurasthenic person to absolute health.

As a rule rheumatism is not a common disease, yet on general principles it may be said that all valvular diseases of the heart are not improved by a high altitude.

The excretory functions of the skin are not performed so freely on first residence. After becoming more used to the change this peculiarity disappears and no effects from it are noticeable. As a consequence the biliary functions are more active, partly from that cause and partly on account of the increased appetite and general improvement.

Nephritic diseases as a rule do not receive benefit from an elevated residence, yet some cases do remarkably well.

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It is a noticeable fact among physicians in the elevated regions of Northern California, that scrofula is almost an unknown quantity, particularly in persons who are born in this region.

The exanthematous diseases seem to be, usually, of a mild and manageable form. Two reasons can be given to apply: One is, that the pure air tends to weaken the vitality of the germ; another that the stronger vitality of the patients tends to increase natural resistance to these affections. Another fact presents itself—that the mortality from measles and scarlatina is very low compared with some localities.

Summing it all up, the dry, even temperature of the northern Sierras and the general elevated regions of the North, especially in the vicinity of Mount Shasta, even in winter time, are very beneficial to many classes of invalids and people of low vitality for reasons already enumerated. Statistics of average temperature are obtainable and comparisons can be made with other localities, yet it is a demonstrable fact that the mortuary tables would be decidedly favorable to this portion of our great State.

DISCUSSION.

DR. C. G. KUHLMAN, of San Francisco: The only point I object to is the germs. There are a good many valuable points about the paper in regard to the filtration of water, etc. Still, I do not agree with the author. I think a certain amount of organic matter is absolutely necessary to carry on the process of life. A certain amount of water capable of producing decomposition is necessary for digestion, and I do not think that any human being would thrive very well on distilled water, but rather would die rapidly. Nor would they thrive very well without certain salts in solution—the chlorides of the earthy metals.

DR. J. H. STALLARD, of San Francisco: I agree with Dr. Kuhlman, very largely, that distilled water is not usually necessary for healthy people. I doubt whether water is necessary at all in its present form.

DR. R. F. ROONEY, of Auburn: How pleasant and agreeable it is to live in California! I don't care where we go in

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this State we find a favorable climate, and one which we can all appreciate, and which we are not ashamed of in any part of the world. I don't care what country they bring to bear against us, we can stand them off, and we ought to be proud of our whole State.

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Obstetrics.

LACERATION OF THE PERINEUM AND ITS IMMEDIATE REPAIR

REPORT OF THE COMMITTEE ON OBSTETRICS AND PUERPERAL DISEASES.

By WILLIAM FITCH CHENEY, M. D., Chairman, San Francisco.

Dr. Joseph Price has remarked that if the obstetrician did his work better, there would be less for the gynecologist to do. Many diseases of the female genitalia date their origin to the act of childbearing; and many, unfortunately, are due to deficient care at that critical time in the woman's life. To prevent parturition from playing so prominent a part in the etiology of pelvic disease, has been the laudable object of modern obstetrics; and much has been accomplished in recent years toward saving woman from the numerous ills that so often used to follow childbirth. Puerperal infections, leaving in their wake a cellulitis or salpingitis, if nothing worse, are not so common now; and vesico-vaginal fistulæ, whose repair some thirty years ago helped to make famous J. Marion Sims, are in this decade rare accidents of labor.

But there remains an injury to which every woman that bears a child is liable—an injury that is still too often neglected; and in its train comes subinvolution of the uterus, or retroversion or prolapse, with a host of pains and aches and nervous symptoms as accompaniments, that make the patient's life a far from happy one, until at last in desperation she seeks the gynecologist for relief. Laceration of the perineum is not a new subject,—on the contrary, it is a well-threshed field; and it would seem that in this day every man who attends a case of confinement should be alive to his duty in this direction. But that every man is not, is proven by the cases that

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continue to present themselves for secondary repair of the perineum. It is not out of place, therefore, to inquire at this time into some of the causes for the neglect of immediate repair, and to look for the reasons why all obstetricians are not doing their duty in this matter.

Laceration of the perineum is not always due to the circumference of the child's head, and this leads those into error who do not inspect the patient after delivery. They have the vulva in view during expulsion of the head; they see the orifice gradually dilate; they observe with satisfaction that the perineum slips over the forehead and soft parts of the face, without giving way at any point; and so convinced are they that nothing has gone wrong, that after delivery they consider examination of the mother's parts superfluous and uncalled for. Thus result the statements honestly made now and then by some practitioners, that laceration of the perineum never occurs in their practice. The fact is that following expulsion of the head, the lower shoulder of the child has come ploughing through the mother's soft parts, doing the damage that the head had failed to do. The shoulder is often to blame for perineal tears; and so violent as a rule is the expulsive effort driving out the body after the head has escaped, and so quickly is the exit made, that no man can tell at the time whether the orifice has or has not been torn. Subsequent examination, carefully carried out, alone can decide whether the integrity of the perineal structure has been destroyed, and if so, to what extent.

It is a fortunate thing for women that sentiment in the lying-in chamber is giving way to sense. They used to suffer often times for months or years after confinement, rather than expose to view their pudenda. Delicacy prescribed that the catheter should be passed by sense of touch, beneath the bedclothes, without exposure of the person; but that delicacy was responsible for many a cystitis or urethritis, due to contact of the instrument with the bed-clothes or with the vulva before at last it found the meatus. So it used to be considered proper to examine the perineum after delivery only by sense of touch, if at all, to determine whether it was torn. It is not strange that the injury was then so often overlooked, for all the tissues about the vulva are infiltrated and softened by the stretching that accompanies birth, and it is next to impossible to tell with

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the finger whether these tissues are intact or not. Unless the damage has been extensive, and the entire perineum destroyed from vagina to rectum, the finger can not be relied upon to tell a tear from a deep fold in the congested and lax mucous membrane about the floor of the vagina; and a woman who trusts to the verdict rendered by such a trial, is likely to find herself later with more modesty than perineum remaining.

Every woman, after labor is finished, the parts have been cleansed and the bed made clean by the nurse, should have her vulva submitted to visual inspection by the medical attendant before he leaves the house. It matters not whether he thinks no damage has been done in the labor; he has no right to form an opinion until the parts have been exposed and carefully investigated. In this examination it is only necessary to separate the labia as the patient lies with knees drawn up and limbs separated. It is not necessary to change her position across the bed unless it is evident that stitches must be taken. But superficial inspection does not suffice. It is essential that one examine the floor of the vagina. Often the exterior of the perineum shows no tear whatever, when within the posterior commissure the mucous membrane, connective tissue and muscles have been deeply lacerated. Such an injury is not uncommon, but is often overlooked because it does not appear from without, since the skin is left intact. To bring this injury into view, the best way is to insert a finger in the rectum and push forward the vaginal floor. This gives a complete view and should not be omitted in the examination, if the part in question is not visible on simple separation of the labia.

Unfortunately there exists a popular impression, shared in by some of the medical profession, that a perineal tear in a labor without forceps should never occur; and so it happens that the man who examines for injuries after labor, and who honestly attempts to repair them at once if found, has discredit cast upon his work; while another man, less conscientious, who never sees a laceration (mainly because he never looks for it), is held up as a model obstetrician, by the very women whom he leaves in a condition for the gynecologist to take care of later on. It is a fact that no infallible method has yet been found to prevent perineal tears. Innumerable devices are recommended in the text-books by authorities, but a man may try them all faith-

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fully in a given case and still the laceration occurs. This has no doubt been the experience of many, especially in the management of primipara. The situation is summed up by the late Dr. Goodell as follows: "One advocates pressure on the perineum with a folded napkin, another with an unfolded napkin; a third scouts all napkins, whether folded or unfolded. One plugs up the rectum, another empties it. The perineum is pushed forward by some and backward by others. Some place their hand transversely across the perineum; some longitudinally, with the fingers looking downward, as runs the nursery rhyme—'Simon says thumbs up, Simon says thumbs down,'—and yet the perineum tears, and tear it will until woman becomes like the cherubs of the old masters—all wings and no body."

These words simply mean that it is not always the fault of the attendant when laceration occurs. Yet we must do what we can to prevent the laceration, and in many cases intelligent effort will succeed. It has seemed to the writer, from trying both ways, that labor with the woman in Sims' position gives better results as regards the perineum than does labor with the woman on her back. Sims' position takes the weight of the presenting part of the child off from the soft tissues posteriorly, and places it instead against the bony symphysis, where little harm can be done. There is not the same tendency on the part of the uterine contractions to crowd the head directly through the pelvic floor, for the force is directed forward of the perineum, against the symphysis and the vulvar orifice. This position, too, gives better opportunity to prevent laceration by the posterior shoulder of the child. The weight of the body of the child is taken off from the soft parts; and by manipulation the posterior shoulder can be guided over the posterior commissure with the hand and so delivered, while the opposite shoulder is for the moment crowded behind the symphysis. This manipulation is possible also with the woman on her back, but must be made then in opposition to gravity and with less chance of success. There have been a host of arguments advanced for and against delivery with the woman on her side; but so far as the perineum is concerned, it is rational to expect better results from this than from the position on the back; and so far as the experience of the writer is concerned, this expectation has been realized.

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It is scarcely necessary at this late day to review the reasons for immediate repair of the perineum lacerated in labor. The advantages of such procedure have become too obvious to require repetition; and it is now taken for granted that every woman whose pelvic floor is injured during delivery, should again be made whole as soon as possible afterwards. There are but few conditions rendering the operation impracticable—such as eclampsia, or extreme exhaustion following hemorrhage, which call for the utmost quietude of the patient. Ordinarily there is nothing to prevent the repair being made; and more and more the sentiment is gaining ground that the man who knows his patient has been torn in delivery, and yet does not try to make her right again, is guilty of criminal negligence. Much of the writing of the present day on this subject, it seems to me, does harm, because it tends to complicate the matter and make the operation appear a formidable procedure. One just beginning practice, or one without elaborate equipment, is frightened by the array of instruments and appliances described in the journal articles by men who do their work in city hospitals; and is persuaded by the diagrams presented and the complicated directions given, that the task is a serious one. As a matter of fact, for the repair of an ordinary laceration of the perineum, all that is required is a surgeon's needle and silk, plenty of hot water and a moderate amount of common sense,—all of which are available in the majority of instances.

One of the most important facts in connection with this subject, is that the laceration need not be repaired at once in order to secure union—several hours may be allowed to elapse after labor is completed, and still the tissues will unite by first intention. This is of vast significance to the operator as well as the patient. Both are frequently exhausted by hours of anxiety and physical exertion, and to each the prospect of something more to be endured, after labor is concluded, is intolerable. It is often better to wait, therefore, before putting in the stitches. Suppose the birth takes place at two or three o'clock in the morning; it is frequently advisable, under such circumstances, to leave the patient alone until nine or ten the next forenoon, when daylight will aid in the process, and rest will have made the woman more ready to endure the operation, and the attendant better able to do his work carefully and

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thoroughly. It is not always advisable to postpone the repair in this way, but there is a satisfaction in knowing that it can be done. I have several times repaired a perineum as late as nine hours after it was torn, and once as late as twelve hours, each time with success.

For the ordinary operation, where the perineum is torn through half-way to the anus, or even entirely to the anus without destruction of the sphincter, an anæsthetic is not required. The stitching should not take over ten or fifteen minutes, and the pain it causes is seldom great, because sensation in the parts has been blunted by the previous stretching and pressure. It is better for the woman to do without an anæsthetic if possible. She should be placed across the bed, with her hips drawn to the edge. If assistants are at hand to hold each lower limb, so much the better; but they are not indispensable, and one can do without them if he must. Towels or a folded sheet or spread are placed beneath the hips to prevent soiling of the bed. The vulva and perineum are then washed thoroughly to remove all blood clots and loose shreds of tissue. This may be done as well with plain boiled water as with a solution of bichloride or carbolic acid. Every man should carry some antiseptic in his obstetric satchel, but the place to use it is on his hands and instruments; if these are surgically clean, the chances are that hot water will answer every purpose for the perineum, unless in exceptional cases when the woman has previously had a suspicious vaginal discharge. The needle used for suturing should be large enough to take in plenty of tissue, and preferably should have a half curve. A needle-holder is an assistance, but not a necessity. Fingers were made before the needle-holder, and a man always has them with him. For suture material, plain black or white silk answers every purpose; black has the advantage of being easily seen when the time comes for removal, but in all other respects white is equally as good. If a man had much obstetric practice among negresses, white silk would probably be better. Silk-worm gut is very satisfactory, except that the ends are sharp and stick the patient after the sutures are tied. It is possible to prevent this by clamping a perforated shot on the ends and then cutting the latter off close, but this compli-

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cates the operation and introduces details that are not absolutely necessary.

If there is an internal tear, extending up the floor of the vagina, either with or without external laceration through the skin, the easiest way to get at it is by placing a finger in the rectum and pushing the tissues forward, while the other hand passes the needle and brings the rent together. This part of the work naturally should be done before the outside is sewed up; and if it is not done, simply making the vulva its former size, by external stitches, accomplishes nothing for the woman subsequently, and she suffers as much as if there had been no effort at repair. This is the reason that women sometimes develop symptoms of prolapse after labor, even when the perineum has nominally been repaired. The outside parts were made to appear as usual, but the tear of the pelvic floor was overlooked, so that the true support of the pelvic organs is left weakened. In every case the greatest care should be taken to examine immediately after labor the floor of the vagina within the vulva, as well as the posterior commissure and the surface between that and the anus. If this internal tear is found, its repair becomes of far greater importance than that of the tissues without. For this, catgut is the preferable material, so that the stitches will not have to be removed. The sutures should be passed deeply on each side to bring together the retracted edges of the severed muscles and restore the proper thickness of the recto-vaginal septum. After these sutures of catgut have been introduced from within, the external laceration should be repaired with silk, from the anus up to the posterior commissure. It is not absolutely necessary, however, to use catgut even for the internal stitching. If one has not catgut at hand, silk may be used for the inside stitches as well; and when the time comes for removing them, they can be brought into sight by rolling out the posterior vaginal wall with a finger in the rectum.

The after-treatment of a perineum that has been repaired is comprehended in the word cleanliness. It used to be argued, before the operation was so common as now, that union could not be expected with the lochial discharge constantly running over the line of suture. But union can be obtained, in every instance, if sufficient care is taken to keep

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the parts clean. Vaginal douches are unnecessary—in fact, are better omitted; but too much water can hardly be used on the vulva and perineum. The water should be quite hot and should be poured over the vulva from a pitcher or a fountain syringe into a bed pan placed beneath the hips. For the first few days, while the lochia are profuse, this washing should be done every three or four hours; after that, three times or twice a day. Particularly should this douche be given after every discharge of urine. With regard to the dressing of the sutured perineum, the ideal materials are a pad of iodoform or bichloride gauze placed next the sutures, covered by a thicker pad of absorbent cotton, the whole held in place by a napkin of linen or cheese cloth, pinned to the binder in front and behind. Each time the perineum is douched, the old pads should be thrown into the fire and fresh ones applied. If the gauze and cotton are not available, clean linen or cotton or cheese-cloth napkins may be placed immediately next the perineum, provided they are known to be clean, and provided they are frequently changed. The household rag-bag, to which recourse is so often had by the ignorant for perineal napkins, is one of the abominations of obstetric practice and should be utterly rejected as a source of supply.

The more extensive lacerations, involving the sphincter ani, and, perhaps, extending an inch or more up the bowel, are not so easily repaired; but, fortunately, they are not so common, either. For these more time is required, more extensive preparations and greater skill on the part of the operator. While their consideration is not within the scope of this paper, suffice it to say that for the repair of such extensive injury the woman should be taken out of bed and put upon a table; an anæsthetic should be administered and assistants secured; and no man should undertake the task without having the details of the operation clearly in his mind.

But the ordinary operation is so simple, it is so easily performed, and the results are so material to the woman's future comfort and happiness, that no one can conscientiously neglect it. In conclusion, therefore, I would urge thorough examination of the perineum after labor, as a routine measure, and more frequent resort to immediate repair when laceration is found. The time is coming when, for the sake of his own

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reputation, no man can afford to leave his patient an invalid after childbirth; and the time has already come when, for the sake of the woman, the obstetrician must be fully alive to the responsibility laid upon him—alive to the interests of the mother, and through her to those of the family; and through the family to those of society at large, whose servants we all are.

DISCUSSION.

DR. G. W. DAVIS, of San Francisco: It occurred to me that Sims' position was rather an exaggerated one. Up to a few years ago I have always confined my cases upon the back. I think it was Dr. Goodell who called my attention to the importance of the left-side position, the old style, I believe, of confining patients. I then adopted that plan, especially in those cases where the vulva was rigid, and where there seemed to be great danger of laceration of the perineum. I found it worked admirably. But in cases where the integrity of the perineum did not seem to be endangered I did not particularly require them to occupy that position, for I found that women generally desire the recumbent position. So I say that the exaggerated position of Sims seems to me to be a wrong one. The left-side position, and a pillow, or some support put in between the knees, is certainly, in my opinion, a better one. As to repair, I do not believe there is to-day any obstetrician who does not examine his case carefully. I think, however, this is not by ocular demonstration. I agree with Dr. Cheney that they depend in many cases too much upon the sense of touch, which is of course a very important matter in those cases. I do not believe there is a member of this Society who finds a laceration who does not repair it immediately, or within a few hours after confinement. The author says that in some cases he waits several hours after confinement before repairing any damage that has been done to the perineum. I think where it is possible it is always better to make that repair at once; to have the nurse remove the soiled clothing, and put a clean sheet under and use absorbent cotton, cleanse the parts, and make the repairs at once. He spoke about the parts being numb. They are certainly more so immediately after the birth of the child than they are several hours afterward, and

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I think that whenever possible the operation should be done at once.

DR. BEVERLY MACMONAGLE, of San Francisco: It is a fact known to all of us that laceration of the perineum will occur. How to prevent it I do not know. Whether one physician or another can do it; whether one obstetrician or another can do it, I do not know. It used to occur in my practice, but of late I have not taken obstetrical cases; and I do not have any lacerations of the perineum to repair at once. If the laceration does occur and is not repaired, it is a fact that it must have been neglected by the man who attended at the time the laceration occurred. Now why laceration of the perineum should be left to heal by granulation any more than laceration of any other part of the body I cannot understand. In regard to the manner of repairing it, that is a matter of individual ability and experience with the instruments and conveniences that are at hand. As far as silk and catgut are concerned, I think they are materials that are not ideal for such operations, for the reasons that they continually absorb the fluids that are excreted from the uterus and from the vagina. Those discharges are well known to contain many bacteria that are poisonous to wounds, and they very often cause trouble. However, if there is nothing better at hand they can be used, and in the majority of instances a stitch at that time will heal without a doubt. As for discovering lacerations, it is a simple matter of examination. I do not think it is a good plan to put the finger in the rectum. I want to take issue with Dr. Cheney there. The rectum is a dirty place, and it makes a dirty finger; therefore you have to go immediately and wash your finger before you can go back to your operation. If the perineum is torn through into the rectum then we have got into a dirty mess and must make the best of it. If a good piece of cotton that is aseptic is passed well up into the vagina and the discharge is prevented from coming down, the operation of stitching the perineum can be comparatively clean. If the operation of stitching the rectum has been done and is a success, the right thing has been done and the right result has been obtained. If the operation is a failure, the right thing has been done and the wrong result has been obtained. But the patient even yet is better off from having had that opera-

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tion attempted, because she can still have the secondary operation done by the attendant when they are ready. I would be in favor of stitching all lacerations of the genital tract unless there is some especial reason. It does not take long, so I say it should be done at once, and if the man cannot do it himself he ought to have what assistants are necessary. I have myself stitched the cervix without any help, and got a very good result. It does not seem to be a very hard thing to do, if you can get hold of that cervix with a pair of forceps to bring it into position where you can stitch it. I have succeeded with catgut, and I have had miserable failures with catgut, for the reason that the bacteria from the vagina have been absorbed into the catgut and made it so poisonous that it poisoned the wound and gave a bad result; therefore I am in favor of silk and silver. Silk is better than catgut. The trouble of removing the stitches after the operation is very slight. I would not put my finger into the vagina. If you can leave a stitch that can be gotten hold of you can feel it, or with a long speculum along the anterior wall of the vagina you can easily detect the stitches and remove them one by one, or in any way you wish.

DR. HENRY GIBBONS, JR., of San Francisco: I simply rise to express my gratification in regard to the facts stated in the paper. I would take nothing from it and add nothing to it. It has been my practice for a number of years to resort to immediate repair of the perineum in these cases. I well remember, however, that when I commenced to practice it was a debatable question among the profession, the large majority of them opposing the immediate operation. I would like to emphasize the point made by Dr. Cheney in regard to the failure to discover lacerations by using the finger alone. I have been deceived many a time in that matter. I have thought that I had no laceration until I made an ocular examination, when I discovered that a laceration existed, sometimes to a considerable extent. A laceration, of course, down to the anus will be easily detected by the finger. A moderate laceration will scarcely be detected. One other point it seems to me is of considerable importance to emphasize, and that is in regard to the laceration made by the shoulder, or increased by the passage of the shoulder. I am convinced it very frequently

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takes place. I do not believe that a laceration often takes place solely by the shoulder, but a moderate laceration begun by the head will be increased greatly by the passage of the shoulder. I do not see the same objection that Dr. MacMonagle does to the introduction of the finger into the rectum for the purpose of a guide in taking the stitches. The finger need not be removed, and, in fact, I do not remove it while the stitches are being taken. The stitches are all taken with the finger in the rectum as a guide, after which the finger is removed and washed and the tying of the sutures is accomplished. It is difficult, perhaps, if the remaining partition between the rectum and the vagina is thin, to avoid passing the needle into the rectum without the guide of the finger, especially to a novice. Of course a man constantly operating in this way could very readily accomplish the operation without his finger in the rectum as a guide.

DR. G. F. SHIELS, of San Francisco: It is difficult to understand why the mere stitching of a contused or lacerated wound, because it happens to be in the neighborhood of the vagina, should be mentioned as a special operation any more than would be the stitching of a wound caused by a blow. I don't see that there is any necessity of making a special operation of stitching the perineum. If it is stitched up it will heal all right.

DR. CHENEY, of San Francisco, in replying, said: I mentioned Sims' position intentionally. That is the position I have put the woman in. It is an exaggerated position on the side, with the left arm behind her, and the left limb drawn up, and the results are as has been stated. I cannot conceive what objections there can be to it. It is not my practice to wait several hours in every case before making repairs. It is the better practice to repair at once if you can. If there are objections offered, then wait. Dr. MacMonagle objects to the use of silk and catgut as suture material. I will admit that silk-worm gut is better suture material, but one must use what he can get, and if he does not have silk-worm gut in hand it is better to use what he has. The opinion of the doctor that silk and catgut are apt to absorb infectious material and cause bad results may be correct in theory, but it is not very often correct

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in practice. They are probably more frequently used than is the silk-worm gut, and the results in the majority of instances are good. If there is doubt about the question one should always carry his silk in absolute alcohol, or catgut as prepared by the several surgical houses. The objection to inserting the finger in the rectum has been answered by Dr. Gibbons. In regard to repair of the cervix I think the time is coming very shortly when the present views with regard to repair of the perineum will extend to the cervix. It was not included in my article, but a great deal is being written and said on the subject now, and probably in a few years attention will be called as forcibly to the immediate repair of the cervix as to that of the perineum. In regard to Dr. Shiels' suggestion, what he has said is exactly in line with what I meant to carry out; why a man in general practice who must sew up a lacerated wound here as elsewhere should think that perhaps a laceration of the perineum will heal by granulation or by the course of nature, is past my comprehension.

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Gynecology.

UTERINE FIBRO-MYOMATA, THEIR DEVELOPMENT AND MODES OF TREATMENT, WITH NOTES OF CASES.

REPORT OF THE COMMITTEE ON GYNECOLOGY.

By LUKE ROBINSON, M. D., Chairman, San Francisco.

Of all lesions of the human uterus none possesses more interest to the physician or surgeon than the myomatous or fibroid growths developed from or within the uterine walls. Whether these new growths are composed of fibrous tissue or made up of unstriped muscular elements, the history of their origin and development is the same, as well as the local and constitutional disturbances caused by their presence.

According to some authorities uterine myomata have their origin in early life and in many cases are said to be congenital. But be that as it may, it is only in adult life, and after years of menstrual activity that they give rise to symptoms sufficently important to be of any interest to the physician or surgeon.

Pregnancy exerts a marked effect on this form of new growth, providing the tumor is wholly or in part interstitial, in which case it necessarily partakes in the process of puerperal involution. The larger number of myomata are developed in the wall of the corpus of the uterus and have their birth place as interstitial buds, differentiated from the muscular tissue of the uterus itself by a covering of connective tissue. Whether they become sub-serous, interstitial or sub-mucous growths depends upon their vascular supply and the variation of mechanical obstruction to their progress and growth; in fine, they will travel in the direction of least resistance.

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The sub-serous tumor when it emerges from the uterine wall into the abdominal cavity will, if richly supplied with blood through its bridge of uterine attachment, rapidly grows, and by its pressure and traction more or less influences the abdominal organs, causing often a long train of distressing symptoms and engendering complications of a most dangerous character; or, on the other hand, it may, by obliteration of its blood supply, shrink and give rise to but little local or general disturbance.

Interstitial myomata, whether single or multiple, occasion local distress and general complications, according to the location and size of the tumors, such as pain due to stretching of the peritoneum, where the direction of growth is sub-serous and irregular, hemorrhages often threatening the life of the patient.

A sub-mucous myoma when it leaves its interstitial environment and becomes polypoid, sets up painful uterine contractions and inter-menstrual hemorrhages. To this condition of affairs, as the case progresses and the polyp increases in size, are added the suffering in rectum and bladder and the increase of hemorrhage with its attendant anæmia.

Having rapidly noticed the different forms of fibro-myomata, we shall proceed to the discussion of their treatment. It is both interesting and instructive to compare the opinions of specialists on this subject.

Matthews Duncan, at the International Congress of 1881, made the bold assertion that no one ever died from a fibroid tumor. Sir John Williams and Herbert Spencer at University College Hospital, London, had three years ago almost ceased to resort to operative procedure for the removal of interstitial or sub-serous tumors; preferring, except in extreme cases, to follow the expectant treatment of the physician. At this period, at the Samaritan and most Continental hospitals, all 'operatable' cases were consigned to the surgeon's knife.

It must be conceded that in the majority of cases of uterine myomata the strictly medical treatment is entitled to serious consideration. My only object in this superficial and hasty review of the subject is to elicit by discussion a concensus of opinion regarding the matter. Apostoli, Keith and a host of others, have certainly effected cures in a large number of inter-

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stitial fibroids by electrolysis. A still larger number of such growths have been checked and their symptoms abated by rest, injections of ergotin and local treatment, such as tamponating and styptic applications to the mucous covering of the myoma. The application of the actual cautery, massage, a selected diet and a proper control of the bowels by salines, are included in the purely medical treatment of these tumors.

We shall now consider the surgical treatment of uterine fibromyomata. As to Battey's operation of castration to prematurely induce the menopause and consequent involution, there is a great diversity of opinion, although it is admitted that the operation in a large number of cases has in time caused involution of the growths and a cessation of their distressing symptoms. When an operation upon the tumor itself is decided upon, the important question is whether the attack upon the new growth shall be made per vaginam or by abdominal section. In this connection I wish to notice at some length, the mode of operation for the removal of interstitial fibro-myomata, adopted some years ago by Professor Vulliet of Geneva, who reports fifteen cases in the February number of the *Annals of Gynecology and Pædiatry*. I can best describe his method by giving the history of a typical case.

"Miss Sophie P., aged forty-three, unmarried, virgin; has suffered between twenty or thirty years from chloro-anæmia, and had small-pox in 1871. Since the commencement of 1884 her menstruations have been painful and abundant. Two years later inter-menstrual loss of blood and a discharge of yellowish white secretion commenced. Since April, 1886, Miss P. has had fearful pains between the umbilicus and pubes, extending towards the kidneys and particularly towards the right hip. Dr. Rolland, of Divonne, found a uterine tumor, and put his patient under a palliative treatment, consisting of sitz baths and astringent injections. He sent her to Professor Vulliet on September 17, 1886. General condition—thin, face pinched, abdomen perfectly round, as in a six months gestation. Local condition—cervix dilated to the size of a sixpence; inferior segment of uterus globular. The finger introduced into the uterus feels a hard and elastic tumor; the organ reached two fingers' breadth above the umbilicus. Dilation—

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intra-uterine examination reveals a fibro-myoma, a conical portion of which projects into the cavity, and another, much more considerable, is found in the superior part of the posterior walls of the organ. In other words, then, the bulk of the tumor is increased in the uterine muscle, and its point projects into the uterus.

"The patient was etherized for exploration. Profiting by the circumstances, Professor Vulliet washed out the cavity with a solution of corrosive sublimate at $\frac{1}{1000}$ per cent, and securing the cervix by claw forceps he split it by two lateral incisions; then, sliding a pair of long, curved scissors along two fingers introduced into the uterus, he commenced a resection of the tumor at the base of the projecting part; then seizing the top of the new growth by a tenaculum it was drawn down, and the resection was continued until it became circular. By traction the neoplasm came down. The incision was stopped when it was found dangerous to cut higher. Vulliet thought that he could remove about a quarter of the tumor as it was; the rest remained imprisoned in the wall. Instead of trying enucleation, which was difficult and dangerous on account of the situation of the tumor, it was decided to leave the further elimination to spontaneous enucleation. The cavity was washed out with sublimate and stuffed with iodoform tampons; the dressings were changed every two days. A discharge was established resembling such as is seen after a normal labor, with this difference that in it were found pieces of fibrous tissue, the patient having felt at different times expulsive pains

"A second examination was made at the end of the month. The greater part of the tumor had entered the uterine cavity. It was drawn outside by forceps and the attachments which held it back were cut through with scissors, and after an operation of about half an hour it was entirely removed. In this case we had to do with a fibro-myoma, partly submucous, partly intra-parietal. The circular incision made around the projecting part of the tumor and the ablation of this part may be considered as a resection. The intra-parietal part under the influence of expulsive pains was afterwards pushed into the uterine cavity. By the permanent dilation uterine action was produced by the tampons remaining in the organ which

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provoked and facilitated the expulsion; at the same time the iodoform cotton assured asepsis and drainage. The patient was seen in 1887, and was in perfect health. I recite this as a typical case, but the same author gives others in which the neoplasms were purely interstitial, with bulging into the abdominal cavity, the treatment of which was followed by complete cure."

I have had some experience in this form of operation, and in a limited number of cases I would most certainly recommend its adoption before resorting to the more serious operation of laparo-hysterectomy.

I now recall a case known to several gentlemen here which was condemned to abdominal hysterectomy by the most prominent specialists of this country and Europe. On her arrival from her trip abroad she was greatly emaciated and extremely anæmic from almost constant hemorrhages. Examination revealed a large tumor incased in the posterior wall of the uterus extending superiorly to the fundus. It bulged into the cavity of the uterus and was equally prominent in the abdominal cavity. After free dilation of the cervix the submucous portion of the growth was encircled by an incision made by sawing through the mucosa and underlying growth with a large, serrated, spoon-shaped curette. The tissue was almost purely fibrous and the enucleation was extremely difficult; the cutting edge of the curette was guided by the left index finger in order to avoid entering the peritoneal cavity. After an hour of hard labor the operation, so far as practicable, was completed; in this case the tumor was not completely enucleated; the superior portion was simply sawn through. No temperature nor hemorrhage followed, nor has the latter ever appeared since. Three months after the operation no trace of the tumor could be felt, and the uterine involution was complete. After a period of nearly four years I am happy to say the patient is in perfect health and weighs 196 pounds.

The operation of enucleation per vaginam is not devoid of danger; nor is it possible of execution in a number of cases where the tumor is situated in the upper zone of the uterus, particularly in those cases where the uterus, by reason of fixation from adhesions, cannot be brought down sufficiently low for the hand to reach the growth.

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Regarding subserous myomata, I can add nothing of value to the accepted literature of the day. In many cases, especially where the tumors are of moderate size, there is a total absence of symptoms and no necessity for surgical interference; whilst in others, pressure symptoms, direct and indirect, are sufficiently grave to indicate operative measures. In these cases, after laparotomy, enucleation should always be attempted whenever practicable in preference to the more dangerous operation of hysterectomy.

As illustrative of the difficulty of formulating a precise pathologic diagnosis and consequent prognosis, even after an exploratory incision, and also with a view of calling attention to the equivocal value of certain symptoms, the following case is presented, sufficient time, in our estimation, having elapsed to allow of deductions:

Mrs. F. L., aged 27 years; enjoyed good health previous to the spring of 1893, when she began to complain of pain in the left hypogastric region, frequent epistaxis, chronic indigestion, emaciation, dyspnœa and gradual increase of contour of the abdomen. In August, 1893, the diagnosis of atrophic cirrhosis of the liver was made by the attending physician, who removed, by tapping, three gallons of ascitic fluid. Temporary relief followed. Same experience, followed by the same treatment, three and four months later, the quantity evacuated measuring four and five and a half gallons. On one occasion the physician tapped at a point one inch above the middle of Poupart's ligament on the left side, and only obtained a few drops of a fluid differing totally from that previously evacuated. This monstrous blunder, or possibly the fear of having added damage or infection to the existing trouble, may explain the physician's withdrawal from the case, which he, moreover, pronounced beyond the reach of medicine and unfit for surgery.

Saw the patient for the first time, in consultation, February 2nd, when she was tapped for the fifth time, five and a half gallons being evacuated. Having serious doubts regarding the existence of cirrhosis in a patient so young and devoid of any history or sign of ethylism or of syphilis, permission was asked to palpate the abdomen after the tapping had been completed. A movable mass, equal to a five months' pregnant

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uterus, was plainly discernible in the left hypogastric region, apparently originating in the pelvis and extending toward the umbilicus. The existence of uterine adhesions raised the question of uterine fibro-cyst, but careful bimanual examination sufficed to eliminate this doubt.

Papillary cyst of the left ovary was diagnosed and immediate extirpation advised. Operation five days later (Feb. 7th, 1894), during menstruation; 4½ inch incision, ¼ inch to the left of the median line. The tumor, equal in size to an adult's head, was easily reached in the left hypogastric region, situated to the left of and anterior to the deflected uterus and extending to the level of the umbilicus. Its appearance was remarkable, comparable, in many respects, to the agglutinated coils of intestines as found in chronic peritonitis. The analogy was so great that when an attempt was made to lift the tumor from the abdominal cavity, several physicians present, and even the assistant, exclaimed in horror that the intestines were being removed. The tumor was composed of multiple-cysts of various sizes and color, united by numerous strong glistening fibrous bands resembling the mesentery with its vessels. On the surface of many of these cysts were myriads of smaller cysts. Above and around the tumor, isolating it completely from the intestines, which were displaced above the umbilicus, there existed a well defined concave wall, composed of a compact mass of light yellow gelatinous tissue, measuring ½ inch in thickness and presenting spots of hemorrhagic infiltration.

Separation of the tumor from its pelvic adhesions offered no difficulty until the immediate vicinity of the uterus was reached. The adhesions in this region were so firm and the vascularity so great that it was deemed expedient to apply two Terrier hysterectomy clamps very close to the uterus and remove *en masse* the tumor, tube and fibro-cystic ovary, the clamps remaining *in situ*. The right ovary and tube were considered healthy and consequently left untouched. Believing the gelatinous wall, previously mentioned, to be of malignant nature, its removal was attempted, but its vast extent and great vascularity and the fear of performing an incomplete and useless task explain the unsuccessful attempt. A sufficient amount was nevertheless excised to ascertain with a reasonable degree of certainty the absence of metastatic deposits in the mesenteric and hepatic regions.

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A Miculiez tampon of iodoform gauze was introduced in the direction of the pelvis to check hemorrhage. The clamps and tampon were removed after 48 hours. The case progressed rapidly, without notable event, to recovery; the patient walking about at the beginning of the fourth week and leaving the hospital two weeks later. Patient menstruated twenty-eight days after the operation and has not menstruated since.

Fifty-one days after the operation she began to complain of incessant nausea, frequent vomiting, epigastric distress and dyspnœa. Firmly convinced of the probability of metastatic deposits or of growths by contiguity with the gelatinous wall which had been incompletely excised it was decided proper to limit all efforts to strict observation, when suddenly the patient vomited several segments of tœnia mediocanellata. Tanret's pelletierin was successfully resorted to, immediate relief ensuing. The foregoing symptoms reappeared, however, two weeks later, the dyspnœa being accompanied and accentuated by a colicky pain in the hypogastric region. The lower third of the abdominal incision had not healed by first intention and presented a small hernia for which a suitable bandage was prescribed. The relief that followed was only temporary, the nausea and dyspnœa returning more pronounced then ever before. Repeated examinations revealed nothing; the uterus was high up and movable, deep palpation elicited no pain. Seven weeks later, pregnancy (of two months) was suspected and shortly afterwards confirmed (136 days after operation). Nausea and dyspnœa disappeared shortly afterwards. January 25th, 1895, (*i. e.*, 353 days after the operation) normal accouchement, 12-pound child. Patient's present condition excellent; increase in weight 60 pounds. There is apparently nothing abnormal in the abdomen with the exception of a ventral hernia which gives rise to but slight trouble.

The examination (macroscopical and microscopical) of the specimen shows nothing positively malignant excepting its general appearance and its rapid vegetative nature, the latter being rather indicative of malignancy. The clinical history of this case most undoubtedly suggests the theory of malignancy; the rapid evolution, the constitutional disturbance, the marked ascites and its rapid and frequent recurrence, all have been generally considered good evidence of the malignant character of abdominal tumors.

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In the majority of ovarian cases accompanied by abundant ascites we have to do with papillary or dermoid cysts with vegetative growths outside the cavity, frequently even with the metastatic deposits upon the peritoneum. Moreover, the question of metastatic infection of the peritoneum naturally arises in considering the dense wall of gelatinous tissue surrounding, and isolating in part, the cystic tumor. Cases are not wanting in which similar conditions obtained, but the patients most invariably succumbed immediately after operative interference. Similar metastases have frequently been reported consecutive to operations on proligerous cysts, and we recall as an example the gelatinous masses after ovariotomy, denominated by Werth pseudo-myxoma.

For the foregoing interesting history I am indebted to the operator and physician in charge of the case, my friend, Dr. Dudley Tait, of this city.

A few remarks may not be amiss in relation to the treatment of purulent affections of the adnexa. All palliative measures (curettage, vaginal incision and drainage, etc.,) are gradually being discarded, and the problem resolves itself to-day in a battle between the laparotomists and hysterectomists, or "vaginists," as they have recently been denominated. At first it was argued that hysterectomy involved an increased danger to the woman, but this is apparently incorrect.

Statistics of many hundreds of cases are presented by the advocates of each respective method, and the good results obtained in both camps only serve to create greater dissension in surgical circles. Thus, the laparotomists (Lawson, Tait, Terrier, Terrillon, Marten, Jacobs, Doyen, Zweifel, Chrobak and Dubois, 1540 cases) have lowered the mortality to 5.7 per cent. The "vaginists" (Péan, Richelot, Doyen, Segond, Rouffart, Jacobs and Krug, 695 cases) show a mortality of 4.49 per cent.

The objections made to laparotomy (Hegar-Battey operation) are numerous: Difficulty in making a radical operation, frequency of hernia and post-operative intestinal adhesions, mal-positions of the inflamed and non-supported uterus, necessity of subsequent hysterectomy, incomplete results as far as the symptoms are concerned, fistula (pyo-stercoral).

The partisans of the vaginal route contend that by laparot-

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omy the "gross but secondary lesions are removed, but the essential and primary cause of all the trouble is left, together with the less apparent but more frequent source of suffering, the inflamed uterus and its nerve centers." (Krug.) It therefore follows (according to the hysterectomists) that if the patients are pathologically cured by laparotomy they are seldom symptomatically relieved.

It certainly is quite logical to consider the removal of the tubes as equivalent to partial amputation of the uterus, and there can be no plausible reason for not removing the rest of the useless, diseased and harmful organ. Moreover, the vaginal route appears more proper, more natural for drainage, physiological or pathological. The remaining uterus constitutes a "*nid à microbes*" (nest for microbes).

In answer to those who claim that vaginal hysterectomy must inevitably be a complete and radical operation, *i. e.*, that both tubes and ovaries must necessarily be sacrificed, it may be stated that it is most always possible to begin the operation by opening Douglas' pouch and then exploring the adnexa by the touch. In case one side only be affected, unilateral ovaro-salpingectomy can be performed by the vaginal route. Jacobs (of Brussels) reports thirteen similar cases, all unsuccessful.

Our personal experience having been most entirely limited to one side of this interesting question (abdominal route) we will not, in this brief communication, attempt to draw any conclusion, but we do not hesitate to admit that vaginal hysterectomy for purulent diseases of the adnexa deserves to be ranked with the indisputable conquests of modern surgical therapeutics.

DISCUSSION.

DR. C. A. VON HOFFMAN, of San Francisco, in opening the discussion, said: I am glad to be able to congratulate Dr. Robinson on the splendid success he had in his case of enucleation of a fibroid *per vaginam*. This method is not a new one; twenty years ago it was practiced, and I had occasion to use several of these operations. The results were not so good, as asepsis was not understood as fully as we understand it now. This enucleation is always a difficult operation, and at the same time a dangerous one, as perforation of the uterine walls is not

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impossible. Only operators who are skillful and familiar with operating on the pelvic organs should undertake it. I am of the same opinion as the author, that in many cases, where the tumors are of moderate size, a necessity for surgical interference does not exist. Even those cases reported during the last year in which the myoma showed sarcomatous changes, are not so numerous that the mere presence of myoma should be an indication for operation, and I was glad to hear him say that in the majority of uterine myomata the strictly medical treatment is entitled to serious consideration. Tamponing and styptic applications to the mucous covering of the myoma will give satisfactory results in many cases. Electricity may be of benefit in controlling hemorrhage and pain, but Apostoli seems to be the only one who claims good results. A few years ago it was claimed and expected that electrical treatment would make operations for fibroids unnecessary, but even in France most physicians have given it up. Battey's operation of removal of the ovaries to induce the menopause and involution of the myoma is not performed very often any more, and the following case will show how uncertain the results are: Eighteen months ago Mrs. N—— came under observation. She was suffering from double pyosalpinx. After laparotomy both ovaries and tubes were removed. In the anterior wall of the uterus, a little above the internal and protruding towards the bladder, a small, hard fibroid the size of a pigeon's egg was felt, but not removed, as I believed that after removal of the ovaries the small fibroid would not give rise to any symptoms. The rest of the uterus appeared normal. About five months after the operation the patient noticed a flow of blood from the uterus. At first regular, every four weeks it became profuse, and then showed itself every three weeks, till the patient was obliged to stay in bed for several days at this period. The profuse flow could not be controlled by curetting, ergot, hot water; only tampons stopped it, and then only temporarily. In the mean time, the uterus grew larger to the size of a child's head, and the finger could feel, besides the original small, hard fibroid, several nodules, especially towards the right side. As the last remedy, I proposed removal of the fibroids, which operation was done five weeks ago with good results. First operation, success. This case shows that even after removal

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of the ovaries myoma may commence to grow. There are several methods of operation for removal of the myomata, and we have to select whichever is the best one in the given case. Especially the French physicians have worked hard during the last two years to find the best operation, and a very interesting article was published by R. Picherin, of the Hospital Necker. He says: A myoma growing from the cervix should be removed *per vaginam*. A myoma growing from the fundus with a pedicle should be removed after laparotomy. The pedicle may be treated intra-peritoneal, especially when the uterine cavity was not opened. Enucleation of interstitial myoma growing towards the cavity of the uterus is seldom done. Laparotomy and enucleation of interstitial myoma growing toward the peritoneal cavity is very conservative, but not liked very much. In supravaginal amputation of the uterus the cervix as a pedicle can be treated extra-peritoneal, and this method has given me such good results that I prefer to operate in this way till something better is found. The pedicle may be treated intra-peritoneal after Schröder's method, or it may be left unsutured, with the elastic suture remaining. Treub published 100 cases treated in this way with seven deaths. The next method is the extirpation of the whole uterus, and can be done from above, from the abdomen, or from below *per vaginam*. Abdominal extirpation of the whole organ seems to be the method of the future, but so far the results are not very good. The published articles make this operation appear very easy, and I am afraid that the general practitioner, who in our time likes to make himself a name by performing laparotomy, will be disappointed with the results. This operation should be left to physicians who are familiar with abdominal operations till the *technique* is a perfect one.

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REST: A THERAPEUTIC MEANS IN GYNECOLOGY.

By CHARLOTTE BLAKE BROWN, A. M., M. D., San Francisco.

During the past ten years the specialty of gynecology has tended, in its treatment, to become largely surgical. An operation is indicated and advised for nearly every case; the removal of the ovaries or a vaginal hysterectomy has become so frequent that patients and their friends discuss it as a matter of course,—the panacea of all woes,—while at times one meets a patient whom it is difficult to prevent from an oöphorectomy, so sure is she that those organs are an unnecessary and objectionable part of her body. And what is the result of all this? Dilating and curetting appeal to the gynecologist as imperative measures in cases of stricture, with accompanying dysmenorrhœa and endometritis,—in follicular endometritis with hemorrhage,—in the large flabby uterus miscarriages have induced, or so frequently found before the menopause, etc. After prolonged observation results show that only about one-half of the cases so treated are really *cured* without careful and prolonged after-treatment. So, too, the much-abused operations for the repair of the cervix, amputation of the cervix, fixation of the misplaced womb by the many methods, do not in more than 60 per cent of the cases *cure* the patient and enable her to do without her doctor; while too often she is in the condition of the Bible woman "who suffered many things of many physicians and grew nothing better but rather worse."

The factors which cause women to be invalids with special diseases are well known, and I shall refer briefly to some of them by a supposed case. A healthy girl of 20 years marries, becomes pregnant and is delivered in the first year; she has a bad laceration of cervix and perineum, neither of them repaired at the time; does *not* nurse her child, owing, probably, to the shock of a tedious labor and the injuries sustained. Her youth and good constitution help her and she makes a fair

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recovery, resumes the care of her family and calls herself well. The second baby comes a year later; number three is born before the first child is three years of age. Still the patient seems well; has nursed these later children in part or entirely. The lacerations do not trouble her. She manages her household and babies with one maid, is bright and happy; she goes out into society with her husband to a less extent, but is still a pretty, fresh-looking young matron. And all this executive force means good strength of mind and body. Then begin the trials of life. "Hard times" affect them, the business worries of her husband, while the little ones are beginning to be more expense continually. Still she is cheerful, although pregnancy at this stage is unfortunate, as her mental force is not quite equal to it. However, if her heart is still buoyed up with love of her husband she rises above even this trial of her strength. Let her, however, feel that some outside influence—"wine, women or cards"—is undermining ever so little her family, and in a short time she is a physical wreck, her troubles pronounced gynecological, and surgery is the *cure-all.*

My picture is not overdrawn, and each specialist recognizes the case, and knows that the operations too often do not *cure.*

In 1875, Weir Mitchell wrote a paper on "Rest in the Treatment of Nervous Diseases of Women." He claimed nothing new in his plan of treatment except the grouping together of several means under one general term of rest. Removal from home and its influences, baths, seclusion, careful attention to digestion, with overfeeding, massage and electricity, and later on abundance of out-of-door life and exercise. Hundreds of women have been so treated by him and others and restored to health and usefulness. Since then the application of these means has extended to many other diseases, the consumptive, dyspeptic, the insane are given modified "rest cures." Even the prison reformatories find overfeeding, baths and intelligent physical exercise have caused remarkable improvement in the moral tone of their former incorrigibles. So I offer nothing new in the suggestion of rest as a therapeutic means in gynecology, but I desire to emphasize it as *the* means to use *first* in many cases, and surgery later if needed, and hope to make clear the reasons therefor.

The case that I have supposed needs rest of mind and body.

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The young girl of 20, married from her father's house, where her life had been guarded and free from hard work, care or anxiety, taking up an active life of wife, house-keeper and mother, never has any rest till her family grow up. Her periods of recreation are unknown. Is it a rest to take the children to the country in summer? To perpetually attend to the running of a household? Or to spend her hours of quiet in repair of the rents of the clothes of active childhood, even if the making of new garments can be done by a skilled seamstress? To oversee the lessons and attend to the expanding minds of the children? Take the mother *out of her home*, when signs of ill health begin, and away from her family; doubly so, do this, if her heart aches from mental worry. Give her a cheerful nurse, pleasant surroundings and all that is embodied in rest treatment, plus the physician able to throw in the occasional word of philosophy which we human creatures need continually in order to live our lives. The patient will grow cheerful from the time for examination of herself and her home-circle perspectively. Improved appetite, digestion and sleep will repair muscle and nerve wear; a little well applied local treatment, possibly curetting or some plastic surgery may be necessary. In my supposed case repair of the lacerations would be indicated, but let these means be made a minor matter, an adjunct to the treatment. Six weeks to three months of such rest will be followed by a complete cure. She will have learned the value to her of a rest hour in seclusion each day thereafter, have adjusted herself to the incurable evils and evolved a plan of remedying those which are curable in her home, and quite as important a lesson will the family have learned in her absence. How valuable is the wife and mother!—for time to think often benefits more people than the invalid.

The school teacher who consults the gynecologist for a train of presumable uterine symptoms needs first the rest; and later, with surprise, one notes that the symptoms are all gone, or how little treatment is needed to cure the case. For do we as specialists consider the wear a *conscientious* woman gives to these fifty or more restless youngsters six hours a day? And the teacher *indifferent* to her work seldom breaks down. Too often the care and work of the schoolroom does not end the teacher's day. Home for many of them means anxiety and

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work, with close economy to make each dollar do the work of two in the support of a parent or the education of younger brothers and sisters. Ten years of such unremitting work lays foundation for a breakdown, which is too often attributed entirely to a misplacement of womb or ovary. Rest the teacher first and then correct the misplacement if necessary.

The young girl of 14 to 16 years, who comes to the specialist for amenorrhœa or menorrhagia with dysmenorrhœa, gives generally a history of steady school life since five years of age, high standing in her class, hours of study out of school, capricious appetite and imperfect exercise. She has grown rapidly, with but little proportional strength, is nervous, highly sensitive and feels as if "driven" by the many things she must do. The suggestion to "leave school for six months" is met by a flood of tears, and the mother urges an examination and treatment preferably. Wait, however, place her for one month in bed in a sunny room, regulate her bowels, allowing her abundant healthful food, daily tub or sponge baths, a nap forenoon and afternoon,—and she will sleep before she knows it when helped to form the habit by an intelligent nurse or mother. No books or fancy work, but as a treat when she has begun to improve, one caller a day from her associates. Without tonics or hot douches such care will cure the scanty or profuse hemorrhage, while unless there is a serious misplacement even the dysmenorrhœa will be better. Then a few months of learning household work, companionship of her mother and out-of-door life, and the rosy, happy girl will prove the virtue of the remedy.

The same treatment with modifications does finely for the "society girl." Late hours, unwholesome suppers, over cultivation of the emotional nature, with the physical fatigue of a season of social duties which really lasts the year around, for the life at the fashionable summer resort differs but little from that of the winter in town, and the girl of 22 to 25 years after a few years of such strain consults the specialist with indigestion, insomnia, hemorrhage and neuralgias—all grouped under the heading of reflex or sympathetic trouble, and the endometritis with erosion found by examination is felt to be the cause. Local treatment, however, is not a *necessity* and

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will not cure her, if it is made the only means and she is allowed to continue her round of social engagements. Place her in perfect seclusion from home and friends and from the news of the day and of her world. It requires more wisdom than nurse or doctor could bring to bear to manage the case in her own home. "Injudicious kindness" on the part of indulgent relatives would bring discredit on the treatment and on the doctor advising it; while the patient, discouraged with its failure, would have made a decided backward step toward permanent invalidism. Hot douches are the only local treatment needed, provided the case remains sufficient time under care. After a month or two of this quiet life let her go to an *un*fashionable resort, where mountain climbing, horseback riding, some "roughing it" with plain board and early hours, will complete the cure.

And now we come to the major operations of gynecology. Perhaps if women were enfranchised and understood their *full rights* they would realize the terrible wrongs which the past twenty years have done them, for alas! the *cures* are not the uniform rule, for the laity even, recognizes already the many physical and mental wrecks following these extreme measures and the utter hopelessness of their conditions. To the sociologist possibly comes the question whether, now that wars are so largely averted among the nations of the earth by arbitration, and pestilence and famine held in check by the better sanitation and more rapid transit of these latter days, the capital operations on women may not be the provision needed to prevent the over-population of the world, for surely the census of the next generation in this country and Europe must be affected by the work of the surgeons of this decade.

Leading gynecologists are arousing to the question. Emmet has always stood firmly opposed to these operations except in extreme cases. Goodell said two years before his death: "I feel that I have been conscientious in every abdominal section I have ever made, but I do not hesitate to say the number of cases which seem to me to justify such operations grows less every year, and I feel now that only after the trial of what is implied by rest treatment has failed, am I willing to consider operation." Dr. Polk of New York has done much to call the attention of the profession to conservatism in this direction, although at present his efforts are still largely surgical.

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Surgery teaches that pus must be evacuated if found in the human body, and cœliotomy for pyosalpinx has been the one operation which seemed absolutely indicated. And yet we know how often the patient is not cured by the operation. I wish to relate one such case treated by rest. Mrs. ———, of this city, a healthy woman of good circumstances, after the birth of her fourth child, nine years since, had a severe attack of septic peritonitis, involving both tubes probably. Her recovery was tedious and after two years of feeble health and much uterine hemorrhage she was sent to Dr. Weir Mitchell of Philadelphia. En route she consulted Drs. Emmet, Thomas and Goodell. Dr. Emmet advised rest and local treatment; possibly curetting might be needed; while the others urged the removal of the pus tubes, or at any rate a free dilatation and curetting, with the hope of drainage through the womb. She absolutely refused *any* operation, spent three months in rest cure treatment in Philadelphia, and returned home in greatly improved health. After a few months of the care of home, husband, four children and the social duties toward a large circle of friends, I saw her professionally for the first time, and she was far from well. Examination showed "sausage" tubes three-fourths of an inch and more in diameter, filling the pelvis behind the womb, which was enlarged, deeply congested, with an endometrium bleeding freely on the slightest interference. Menstruation was really a hemorrhage. I said frankly: "A capital operation is all that will cure you. Curetting may be a benefit and is less dangerous." Then I learned how closely I had agreed with the specialists in the east and of her dread of any surgery. She promised to obey my instructions faithfully, rest in bed, with hot douches at the menstrual period. Twice since then in seven years I have treated her for pelvic inflammation, the last time four years since. Each time she said the attack was her own fault—overfatigue and then carelessness in too thin dress at a party. She decided at the time of the first attack, so violent was it, to have the operation, and a room was assigned and some preparation made, but the response to treatment and her own feelings previously expressed made me postpone it; and now I doubt if it will ever be needed, as she has learned the need of *rest* to herself, although she accomplishes a great deal of work in her

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life. The menses are normal now. She is sterile, although 38 years of age, and the large tubes are plainly to be outlined, but not so tender as formerly.

One other case where an operation seemed the only cure. A German housemaid, unmarried, 42 years, came to me for persistent headache of fifteen years standing. Her nervous system was greatly impaired by the suffering, and weeping was her constant state, from joy or sorrow. My diagnosis, which was confirmed by two able gynecologists, was degeneration of the ovaries and their removal was urged. Her general condition was such that rest cure for a time was advisable before surgery. She remained three months in the hospital, and was then sent to a quiet country town. After six months improvement of her whole condition was so marked that the operation was abandoned. At 45 years she was married, was delivered of a child at 47 years and is now a healthy woman, eight years after I first saw her.

These isolated cases prove nothing, perhaps; but straws indicate the direction of the wind and they may serve to urge upon some of the profession how much wisdom and therapy there may be found in intelligent conservatism in gynecology.

DISCUSSION.

DR. T. W. HUNTINGTON, of Sacramento: Though the hour is late and the members of the Society present are weary, I feel that this paper ought not to pass into oblivion without some little comment. I regard the paper as one of especial excellence, and it is to me particularly cheering to hear from the lips of a person who is so closely in touch with her *clientéle*, and who has so carefully analyzed situations as has the author, that we can do something other than resort to the knife. After a considerable experience by the ordinary methods of treatment of this class of cases, with an occasional resort to laparotomy and other operative measures, I have learned that no matter how skilful the operator may be, no matter how conscientious he may be in the selection of his methods and his means, that the humiliation of defeat will now and then upset his calculations and render him at least doubtful as to the propriety of very many of the procedures which are so often resorted to in these modern times.

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A PLEA FOR THE PEDICLE METHOD IN HYSTERECTOMY FOR UTERINE FIBROIDS.

By W. H. MAYS, M D., San Francisco.

In removing a fibroid uterus, there are practically two courses open for us to pursue. One is to extirpate the mass completely, either including the whole of the cervix or leaving behind its infra-vaginal portion; the other to make a pedicle of the cervix and clamp it in the abdominal wound. The latter, known as the extra-peritoneal method, or the pedicle method, is the one that should be preferred, I think, in almost all cases of hystero-myomectomy.

The total extirpation operation is practiced by Martin, of Berlin, Edebohls, of New York, and other eminent men. Dr. Edebohls considers it the ideal operation. He has described its technique minutely and admits that he has no experience with the other method. It may, therefore, be referred to as the Edebohls' operation. It is radical and sweeping, and in this sense may be considered "ideal," leaving a neat line of stitches across the pelvic roof; a result which, in place of the preceding condition, is certainly gratifying to the artistic sense. But does it offer the best chance of success to the patient who has placed her life in the operator's hands? That is the question. As Dr. Marcy observes, the ideal operation is that which attains the object and saves most lives.

Among those who, on the other hand, favor the pedicle method are Bantock, Pean, Keith, Tait and Price. Bantock earnestly, and in the face of some opposition, advocated this method before the last International Medical Congress, at which time he reported 23 recent cases with but one death. He operates on not more than one-fourth of the cases that come under his observation; only when life is threatened from hemorrhage, or when the sufferings of the patient demand it.

Without essaying a full description of the pedicle operation, there are a few points in the procedure that I will ask permission to briefly dwell upon.

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The initial incision should be higher up the abdomen than in an ordinary laparotomy in order that the bladder, which is often drawn up by the neoplasm, may not be injured. Prolong the incision, when necessary, well beyond the umbilicus. After the tumor is lifted outside the parietes, the upper part of this incision may be drawn together with provisional sutures. These sutures are not tied, but simply crossed, with a forceps hung onto each end to weight it down.

A large globular tumor is sometimes so firmly impacted in the posterior cul-de-sac that it is difficult to deliver or eventuate it. Sharp-toothed instruments should not be used for grasping it, as they tear and macerate the tissues and often cause troublesome hemorrhage. The same objection in a less degree may be brought against Tait's corkscrew contrivance, which he screws into the "fundus" of the tumor to lift it by. Dr. Martin, of Chicago, recommends the short obstetric forceps for the purpose, a practical and excellent suggestion. Between the tumor and the partially approximated abdominal walls on which it now rests, a sterilized towel is spread.

After delivering the tumor (sometimes before doing so) tie off the broad ligaments on either side, leaving the ovaries attached to the mass. The next step is an important one. Catch up the peritoneum with hemostats across the front of the uterus, from one side to the other, leaving them hanging there. Care must be taken not to include the bladder. Five or six or more hemostats may be thus applied. Then lift the tumor and affix a similar line of hemostats behind. Now divide the capsule, down to the uterine parenchyma, a little above the line of hemostats, and strip it down in front and rear. The transfixion pins may now be pushed through the pedicle, the wire of the Koeberle placed below them and tightened, and the tumor cut off an inch above the pins.

The next procedure is to stitch together the parietal peritoneum and the peritoneum of the pedicle, and thus shut off the lower abdominal cavity. The pedicle peritoneum is still held by the two rows of hemostats and can be readily handled. While an assistant pulls up the pedicle, sew the two serous membranes together with fine interrupted silk sutures, bringing the ends outside. I need not dwell on the succeeding steps, the closure of the abdominal incision with the pedicle fixed in

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its lower angle, the trimming of redundant tissue from the stump, and the final dressing, after packing pledgets of gauze under the pins and around the clamp.

The wire should be tightened by a twist or two every day. The stump comes away from the 7th to the 14th day, leaving a healthy granulating surface. With proper management there should be no suppuration about the pedicle.

It might be thought that the resulting cicatrix will be an unsightly one. This is not necessarily the case. The walls close over and meet, and in the lapse of time there is usually little to indicate in the scar the former presence of the pedicle. Ventral hernia is not more liable to follow this operation, nor need vesical complications be feared. Another theoretical objection is the so-called "drag on the pedicle." There is no such thing, practically, to be reckoned with.

Is it not difficult, it may be asked, in many cases to bring up a short thick stump to the external incision? Reasonable as this objection seems to be, *prima facie*, practical experience does not bear out the supposition. Oftentimes a large tumor has already dragged up the cervix well into the abdominal cavity, and in such cases the stump readily adapts itself at the abdominal wound. What may be called the pelvic diaphragm is, with its folds and duplicatures, very extensible, and easily permits a large amount of upward traction of the cervix uteri. Added to which we have, after the removal of a tumor, a lax and even redundant abdominal wall.

When the cervix is thinned out and elongated, the operation is comparatively simple. But on the other hand, we are liable to encounter fibroids of the multinodular variety, perhaps spherical in shape, where the whole uterus, not only corpus but cervix, is lost and buried in the neoplasm. In such instances, the formation of a pedicle would seem to offer formidable obstacles. Yet after investing the base of the mass, fore and aft, with a line of hemostats, and stripping down the envelope or capsule, above them, it is surprising how materially the bulk of the tumor has been reduced and how easily it may be encircled with the wire. There are but few cases in which a pedicle may not be formed, even where we have apparently no cervix or pedicle whatever to start with.

The Koeberle clamp, like the one here exhibited, is the best

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form of *serre-noeud.* It is compact and simple. The wire and pins, as well as the instrument, should be silver-plated.

My own experience has been such as to bias me strongly in favor of the extra-peritoneal method. I have done five hysteromyomectomies in the past thirteen months, all but one of them at St. Luke's Hospital in this city. Four were by the pedicle method, and one a total extirpation. Successful results followed in each case. My last pedicle operation was done March 29th, eighteen days ago. She is sitting up to-day for the first time after an uninterrupted convalescence. The abdomen in this case was occupied by an enormous solid fibromyoma. Repeated bleedings through the past year had badly exsanguinated her. The operation took forty minutes. The stump came away on the eighth day. In my last two pedicle cases I have been surprised at the moderate amount of subsequent shock and the rapidity of the recovery. The removal of these heavy painful and disturbing masses seems to be welcomed by the economy.

The reasons for preferring the pedicle operation in hysteromyomectomy, rather than total extirpation, may be formulated as follows:

1. It is safer. A lower mortality attends its performance.

2. It is easier and quicker. As a rule it requires one-third less time.

3. It is followed by less shock and reaction and a smoother convalescence.

4. With the wire noose, complete hemostasis is assured.

5. It is attended with less manipulation of the peritoneum and exposure of the intestines. After eventrating the tumor the greater part of the work is done practically outside the peritoneal cavity.

6. The risk of wounding the uterus and bladder is minimized.

7. The danger of sepsis is less than in the Edebohls' operation, where a considerable amount of plastic work must be done on the pelvic floor, and a mass of ligatures left behind.

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Diseases of Children.

MODERN IDEAS ON INFANT FEEDING.

REPORT OF THE COMMITTEE ON DISEASES OF CHILDREN.

By E. S. MEADE, M. D., Chairman, San Jose.

Keeping step with the modern advance of medical science, the problem of infant feeding has, in the last few years, made important and rapid progress. The practical application of principles already well established has aided in no small measure to bring about this result. To those most interested in the subject, it presents an almost inexhaustible field for study.

"Human beings in the first twelve months of life are carnivora. An animal food, entirely and always free from any vegetable constituents, has been proved to be the nutriment on which the greatest number of human beings live and the least number die."

In searching for a substitute for human milk, we naturally turn to that which is nearest at hand and most easily obtainable—cow's milk. But that there is a marked chemical difference between these milks is well known, and to make the substitution practicable there is need for a modification of the cow's milk, and it is this that the milk laboratories of to-day are seeking to accomplish. We know that normally the breast-fed infant obtains in human milk a sterile, neutral or faintly alkaline food, and that its temperature averages 99° F. We know, too, that cow's milk is, as it reaches the consumer, not sterile; it is acid, and its temperature is much below the 99°. Besides this, human milk has a higher specific gravity, more milk sugar, slightly more fat, and much fewer albuminoids, and less ash, while its coagulation is 1/5 to 1/6 as great. It is then our aim to so modify cow's milk that it will ap-

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proach as nearly as possible the normal nutriment of the infant.

Dr. T. H. Rotch, of Boston, whose pioneer investigations have done so much in this line, lays down the following principles regarding modified milk: "It should be: (*a*) Free from foreign matter. (*b*) But a few hours old. (*c*) Practically sterile. (*d*) Neutral or faintly alkaline. (*e*) Warmed to 100°F. before feeding."

The milk and cream separator provide for the first requirement. A dairy near at hand, or at most but a short distance from the city, practically meets the second. The pasteurization (or sterilization of milk at from 155° to 165°F. for 20 minutes) fulfills the third, for it has been proven that all the more common pathogenic bacteria are destroyed, or rendered inert for from 24 to 36 hours at this temperature. Aside from this it possesses many advantages over milk sterilized at 212°F.—it is more digestible, the casein being more easily acted upon by pepsin and pancreatin; the starch liquefying ferment is not destroyed, and the alteration of the milk sugar is not so great. While milk sterilized at 212°F. possesses great value in gastro-intestinal disorders, yet as a regular food it is often unsatisfactory, and instances are not wanting where children who have been fed exclusively upon it, have developed marked symptoms of scorbutus.

Again quoting Dr. Rotch: "Certain separate elements are needed for the combinations required in modifying cow's milk: (*a*) A cream which contains the fat required. (*b*) A milk deprived of its fat. (*c*) A solution of milk sugar. (*d*) Distilled water. (A method for modifying the individual salts composing the mineral matter of cow's milk has not yet been determined, but the mineral matter as a whole fortunately adapts itself proportionally to the other elements.)"

That the modification may be done exactly there should be a dairy under control of a laboratory, and the laboratory should be in the hands of competent persons. All of this, and more, has been obtained by Dr. Rotch in the Walker-Gordon Laboratory, of Boston. In other cities, however, this ideal has by no means been reached, yet the results obtained by approximately following out these ideas have been very gratifying.

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Given Dr. Rotch's "working basis," which is the normal average of fat, milk, milk sugar, albuminoids, and mineral matter in human milk, and with a knowledge of the requirements of the infant, as a rule, the success attending such feeding, is all that could be desired. That even very young children possess idiosyncracies, and that these peculiarities must be studied closely by the physician cannot be gainsaid.

Some two years ago a milk laboratory connected with the Children's Hospital was established in San Francisco. Its aim was and is to furnish to bottle-fed babies milk prepared as nearly as possible after the methods obtaining in the larger Eastern laboratories. Owing to a lack of funds, as well as of facilities, the opportunity for any original work has been impossible. And for the same reasons, the very complete equipment of the older and wealthier laboratories is wanting. But the investigations and results of other workers have been carefully watched, and practical applications made. The dairy from which the milk comes has been examined and the milk analyzed and tested. The cream and skimmed milk are obtained by the separator process, and are delivered at the laboratory between seven and eight hours after milking. Every precaution to insure cleanliness is observed. The bottles are all thoroughly washed and steamed before being used.

The milk for each child is modified separately and according to its particular formula. Enough milk is put into each bottle for one feeding, and enough bottles are prepared to last 24 hours. When the bottles are ready they are corked with cotton and put into a sterilizer. Each sterilizer holds from 30 to 40 bottles, and only bottles containing the same amount of milk are put into the same sterilizer. A thermometer is put into one of the bottles and the heat (gas) is turned on. For from 15 to 20 minutes the temperature is allowed to range from 155° to 165°F. (unless otherwise ordered), the heat being regulated by openings in the sterilizer. Then the bottles are taken out and cold water run on them until the milk is perfectly cool—this sudden cooling plays a very important part in the pasteurization, for if allowed to cool slowly the growth of such bacteria as have not been destroyed, or of their undeveloped spores, would be favored. When the milk is thoroughly cooled lime water or bicarbonate of sodium is added to suit

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the case. After this the bottles are tightly corked and placed in their respective baskets, ready for delivery.

In some instances milk sterilized at 212° F. has been used. Aside from the difference in digestibility there is a marked difference in odor, taste and appearance between pasteurized and sterilized milk, and most babies show a decided preference for the former.

The greatest and most common difficulty to be overcome in bottle-fed infants, otherwise healthy, is constipation. There is nothing that so taxes the patience of the physician and of the mother. A few cases will illustrate the peculiarities of different babies as well as the difficulty in always arriving at the desired result at the first or even the second trial.

CASE I. An infant of two months, healthy except for an attack of acute indigestion brought on presumably by one of the commercial foods. Modified milk was begun during this attack. There was a marked improvement in every way for about one month, when constipation became annoying. An increase of milk sugar was ordered by the physician in charge, but, after two days, this was discontinued on account of its diuretic action. The lime-water was decreased, and one-third the original amount of cream was added. This last addition produced the desired effect, so that, except for increasing the strength of the milk as age advanced, no change was necessary up to eight months, when straight milk was used.

CASE II. Was a perfectly healthy infant of two days, and did well on modified milk up to three weeks of age, when constipation caused trouble. The first change was a lessening of the amount of lime-water, with but slight improvement; then one-half the original amount of cream was added, with a better but not a permanent result; again, the milk sugar was doubled; and, finally, casein, represented by the skimmed milk, was almost entirely withdrawn, with such good effect that for the past six weeks little or no trouble has been experienced.

CASE III. A strong infant of four months was troubled with obstinate constipation on beginning modified milk. The addition of cream and milk sugar at different times had little or no perceptible effect, except that a limit was reached when the excess of cream was not tolerated. Then in place of the boiled water, oat-meal water was gradually substituted, and

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improvement in the whole general condition was noted. About six weeks ago the oat-meal water was replaced by a weak, whole wheat gruel, and at the present writing there is a most satisfactory condition in every respect.

These are but a few of many analogous cases that might be cited, not so much to show any brilliant results, as to prove that the feeding of infants cannot be controlled by cast-iron formula or rules; and that the digestive peculiarities of infants are as various and marked as of adults.

It is impossible in the vast majority of cases to make those changes or even to prepare milk in a private family to the satisfaction of all concerned. There is a demand for a means by which this need can be met, and it is by a milk laboratory properly equipped and managed that the problem can be most satisfactorily solved.

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DISCUSSION.

Dr. L. M. F. WANZER, of San Francisco, in opening the discussion, said: The paper just read is one of profound interest to me, as at no period of life is careful management of food so much needed, as during that of infancy. Nothing constitutes so great a source of sickness and death as unwise feeding. We all agree that no food can adequately replace the mother's milk, during the first period of infancy. But, if, by accident, disease or death, the child is deprived of the food destined by nature for it, and we must supply a substitute, what substitute shall we take? The paper just read gives valuable suggestions in the use of sterilized and pasteurized milk, and it is unfortunate that the use of this food cannot become more general. In San Francisco we have a desirable laboratory, but the finances of the institution are such that we are unable to donate the prepared milk to the needy poor, the result being that but few can be fed as we would wish to feed them. Under these circumstances the question of the supply to be provided as a substitute (if the mother's part fails to be ful-

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filled) has to be decided upon. Among the poor the milk is apt to fall short of the infant's needs. How often shall we feed the baby; how much nourishment give it; how long at mother's breast? are questions we are constantly called upon to answer. The cravings of an infant are often easily satisfied and frequently renewed. A healthy infant sucks the breast with avidity but sucks little at a time. It leaves an interval for thoroughly digesting the little which it has swallowed; after which its appetite revives and a fresh supply is demanded, which no one can misinterpret. If deprived of the breast the same rule should apply to the use of the bottle. We try to teach that there ought to be a fixed time, say an interval of one or two hours, for giving nourishment. I believe the stomach cannot be thus satisfied. Digestion may be slow in one child and the interval consequently too short; in another it may be quick and the interval too long. The time and sign which never need be mistaken is the active call of the infant. It is held that over-feeding is responsible for many of the troubles of early infancy—perhaps if we look to the *quality* and kind of food we shall not find so much fault with over-feeding. As to the amount of nourishment consumed by a healthy child fed at the breast it has been determined that 36 ounces is the smallest quantity that will suffice for the daily nourishment of a healthy infant. Not less important is the quality of the air and the environments to which the child is exposed.

Dr. Adelaide Brown, of San Francisco: During a service at the dispensary of the New England Hospital, in the summer of 1893, I had opportunity to use the Walker-Gordon laboratory milk in the gastro-enteritis of infants, so common during the hot weather in our Eastern cities. A fund collected each spring in Boston for the use of the babies of the poor enabled us to furnish our little patients with this milk at 10 cents a day, the general price being 50 cents. Our practice was, on being called to such a case, to wash out the stomach and large intestines and allow no food to be given until the Walker-Gordon milk came. The milk was ordered by the following prescription blanks, and my experience with it was most satisfactory:

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THE WALKER-GORDON LABORATORY,
203 CLARENDON STREET.

℞	PER CENT.	REMARKS.
Fat.....		Number of feedings?..... .....
Milk-Sugar		Amount at each feeding?.....
Albuminoids.....		Infant's age?.....
Mineral Matter.....		Infant's weight?.....
Total Solids.....		
Water		
	100 00	

FOR WHOM ORDERED.

Date, Signature,

....

If the physician does not care to mention the especial percentages, he can ask for percentages which will correspond to the analysis of average human milk, and he can then vary any or all of these percentages later, according to the need of the special infant prescribed for.

The points gained are: 1st. A perfectly clean bottle; 2nd. A uniform and good quality of milk; 3rd. The quantity and proportion of the various ingredients can be varied to suit needs of various children. In using such a laboratory there can easily arise criticisms, unless the physician who orders the milk oversees from time to time the increase in its quantity and strength, as the child grows older. To my mind every artificially fed child should be under intelligent observation until it passes infancy, and its development carefully noted. The establishment of such milk laboratories will be of great value and assistance to the physician in coping with the difficult question of infant-feeding.

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Neurology.

PERIPHERAL NEURITIS.

REPORT OF COMMITTEE ON NEUROLOGY.

By H. G. BRAINERD, M. D., Chairman, Los Angeles.

A score of years ago inflammation of the peripheral nerves, except from actual trauma, was believed to be a very rare disease; but more recent investigation has shown that it is a very common pathological condition. The inflammation may involve the perineurium and interstitial connective tissue, and is called peri-neuritis; or it may be limited to the nerve fibers themselves, when it is called parenchymatous neuritis; or it may be of the diffuse type involving both the connective tissue and the nerve fibers. In perineuritis the inflammation is usually sufficient to produce so much pressure as to cause more or less destruction of the nerve fibers themselves. Hence the clinical symptoms in either form are substantially the same. The naked eye appearance differs somewhat in neuritis. In perineuritis there is often sufficient increase of connective tissue to be quite apparent, so that the nerve may be felt as a hard cord when it lies in exposed positions. As a result of this increase of the connective tissue complete recovery from sensory disturbance is rare, but the recovery of motor power may be quite rapid. If the inflammation has been severe enough to destroy the axis-cylinders of the nerve, the process of degeneration of the nerve fiber is usually complete in two or three weeks, and in favorable cases is followed by regeneration, which may require a period of two years, and often is never complete. In the parenchymatous form there is very little change in the naked eye appearance of the nerve. The pathological change in peri-neuritis is an infiltration of white corpuscles, and sometimes of blood corpuscles, in the peri-

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neurium and endoneurium, which breaks up the myelin of the nerve fiber, and sometimes destroys the axis-cylinder of the fiber itself.

In parenchymatous neuritis the connective tissue is unaffected, but degeneration of the Wallerian type takes place in the nerve fiber. In the diffuse type both of these conditions exist.

The axis-cylinders of peripheral nerves are the prolongations of the processes of motor, sensory and trophic cells, and are all found in varying proportions in each spinal nerve. Rarely are all the fibers of the nerve so involved in the inflammatory process of neuritis as to undergo degeneration; but ordinarily enough of each kind are involved to cause motor, sensory and trophic symptoms. But the involvement may be such that either the motor, or the sensory, or trophic symptoms may greatly predominate.

The inflammation is not usually equally severe throughout the length of the nerve, but is distributed in patches, usually being most severe where the nerve emerges from a bony canal, or passes through fasciæ. In considering the symptoms of neuritis it is well to bear in mind that there is probably a physiological difference in motor and sensory impressions, and that a slighter degree of conduction may arouse the sensory centers than will suffice to arouse the motor centers in the brain.

The symptoms of neuritis are usually a numbness, tingling and pain of a burning, boring, radiating character, beginning in the most distant portion supplied by the affected nerve; and though these sensory disturbances may extend to the whole area supplied by the affected nerve, they continue most marked in the distal portions. Depending upon the intensity of the inflammation there will be loss of motor power, varying from slight paresis to complete paralysis; diminution or loss of the reflexes; and the muscle loses its faradic irritability, while its galvanic irritability is increased. Instead of the typical reaction of degeneration there is sometimes loss of reaction to both the faradic and galvanic currents; or again there is an early increase of irritability to both these currents, with later diminished faradic and little or no increase in galvanic irritability.

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In cases where the inflammatory process is severe enough to produce marked loss of motor power, the typical reaction of degeneration is quite uniformly found within ten days of the onset. Besides the tingling, numbness and pain, which are increased by pressure over the nerve trunks or by motion, there is great diminution of the perception of tactile, muscular, temperature, and painful sensations. The tactile and muscular senses are often completely lost, but the appreciation of temperature and painful sensations is rarely wholly abolished.

The most common trophic change is rapid atrophy affecting the muscles, often accompanied by coldness and œdema of the affected limb, together with either a shiny or rough appearance of the skin. Sometimes trophic changes occur in a joint resulting in deformity and fixation.

Anatomically, there are two kinds of neuritis, isolated or mono-neuritis and multiple or poly-neuritis. Mono-neuritis is more frequently caused by traumatism than by all other causes. It may also be caused by the toxic effects of lead, arsenic, mercury and silver; and also by tuberculosis, leprosy and syphilis, and frequently by the rheumatic or gouty condition.

Under this head of isolated or mono-neuritis may be placed shingles, Bell's facial paralysis, Erb's brachial paralysis, lead palsy, all peripheral paralysis of traumatic origin, most cases of sciatica, and many cases diagnosed as muscular rheumatism or neuralgia. Shingles is an acute dermatitis due to a neuritis of the intercostal nerves, in which the symptoms are almost entirely of a sensory and trophic character. Bell's facial paralysis is a neuritis of the seventh cranial nerve, or that portion of it which lies in the Fallopian canal. As the seventh is a purely motor nerve, the symptoms are almost entirely motor. In those painful affections of the nerves which have been called neuralgia, when in addition to the pain, there is either a decided atrophy of the muscles supplied, loss of motor power, loss of reflexes, or when the reaction of degeneration exists—there is undoubtedly an inflammation of the nerve, instead of a purely functional condition.

The literature of multiple neuritis was very meagre prior to ten years ago. The clinical symptoms of a typical case were

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described by Jackson, of Boston, as long ago as 1822, but it was not until the publication of Buzzard's Harveian Lectures in 1885[1], that an accurate clinical picture of the disease was established. In 1887[2] Starr added much to the knowledge of the pathology, etiology and symptomology of this disease. In 1890[3] Ross added still further to our knowledge of the disease. And Gowers in 1892[4] gave a very full and minute description of the pathology, etiology and differential diagnosis of all forms of the disease.

Multiple neuritis may be of two types, the subacute and the acute pernicious type, either of which may be caused by a peculiar blood state, the exact nature of which is not known; but may be developed by diabetes, gout, rheumatism, beri-beri, diphtheria, infective fevers, malaria, tuberculosis, syphilis or leprosy; or may be caused by the poisons of alcohol, illuminating gas, lead, arsenic, mercury, or phosphorus: and may also be caused by exposure to cold and damp and by violent exertion. And recently numerous cases have been reported which seem to be due to the changes of senility. In four cases which I have seen there was a history of alcoholic addiction, together with exposure to cold and wet. The motor, sensory and trophic symptoms are very similar to those described in mononeuritis, and, as in it, there may be a marked preponderance of either motor or sensory or trophic symptoms. In a typical case both the upper and the lower extremities are involved; sometimes the disease extends to the thoracic and abdominal nerves, and still more rarely attacks the cranial nerves. When the vagus is attacked the disease is usually quickly fatal. The sensory and motor symptoms are most marked below the elbows and knees, and usually symmetrical in their distribution, beginning in the feet and rapidly extending to the hands. However extensive the involvement, the sphincters of bowel and bladder are rarely paralyzed. When there is incontinence it is likely to be due to the mental apathy rather than to the actual impairment of the sphincters. Not infrequently in the course of the disease dementia with transient delusions is developed, especially in cases of alcoholic origin.

Multiple neuritis may complicate anterior polio-myelitis,

[1] Lancet, Nov. and Dec., 1885.
[2] Med. Record, Feb., 1887.
[3] Med. Chron., Apr., 1890.
[4] Diseases of the Nerv. Sys., 1892.

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especially when of rheumatic origin; or rather the rheumatic or gouty condition may cause both diseases at the same time. As in the case of a child reported by Burnham[1], and in the case of a child which I saw about three yeaas ago. The child was about fifteen months of age, and suffered from a well-marked attack of acute rheumatic arthritis, which was followed in about two weeks by sudden paralysis of the lower limbs, with ankle-drop, and reaction of degeneration. A few days later the same symptoms appeared in the upper extremity, being most marked on the left. A week later, before much atrophy had taken place, the child suffered intensely whenever the limbs were touched or moved, and all the limbs rapidly atrophied. Later the respiratory muscles became involved and the child died from respiratory failure. No autopsy was permitted. But from the sequence of symptoms, I feel sure that the anterior polio-myelitis succeeded and was caused by the rheumatism, and that later the same cause acted to produce a multiple neuritis.

According to Gowers the inflammatory process may ascend from the nerves and cause spinal meningitis, anterior poliomyelitis, or even diffuse myelitis. In diphtheritic paralysis the motor and trophic symptoms are most marked; the sensory disturbance usually being slight. It involves more frequently the cranial than the spinal nerves.

There may be considerable difficulty in differential diagnosis between multiple neuritis and anterior polio-myelitis in children who are too young to give an account of their sensations, or in cases of diphtheritic multiple neuritis, where the sensory disturbance, as is often the case, is slight. Both diseases have the common symptoms of a febrile onset, early paralysis, loss of reflexes, rapid atrophy, reaction of degeneration, ankle-drop and wrist-drop. The onset, however, is more abrupt in anterior polio-myelitis; the paralysis develops more suddenly and at first involves the whole limb, rapidly improving in all but a few muscles; while the paralysis of multiple neuritis is usually symmetrical, invading both feet and hands at the same time. Anterior polio-myelitis rarely involves all four extremities at the same time, though sometimes may successively involve all. The atrophy is much more rapid but less persist-

[1]So. Cal. Pract., Jan., 1895.

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ent, and the reaction of degeneration comes earlier in neuritis. In uncomplicated anterior polio-myelitis there is an absence of sensory symptoms, but in multiple neuritis pain is almost always a prominent symptom, together with a diminution of the temperature of the tactile and muscular senses. The following cases will illustrate various types of the disease.

CASE I. E. M., age 34; married; a large, strong, well nourished man; was admitted to the L. A. Co. Hospital Sept. 24, 1890. He had been dissipated for two years, and for the past few months had drank very hard. About a week before admission slept on the ground when drunk; woke in the morning feeling very stiff, and noticed that day, that his feet were numb. This feeling, together with some tingling, increased and extended up his legs. When he came into the hospital he could walk, but complained of pain throughout the region supplied by both sciatic nerves. This pain was increased by pressure over the nerve and any movement of the legs; tactile sensibility of the feet was much blunted; knee jerks and plantar reflexes absent; no impairment of the sphincters; reaction of degeneration in both legs; complained of some numbness in hands; temperature 101½; pulse 110. He grew steadily and rapidly worse; legs became entirely helpless and very painful; hands and arms soon became as bad as his legs; two weeks after admission he could move neither hand nor foot, and respiration began to be difficult. He died of respiratory failure October 18th, about four weeks after he laid out on the damp ground over night. During the last two weeks there was great mental failure with transient delusions. At the autopsy we removed the spinal cord and a portion of one of the sciatic nerves. Numerous sections of the cord in both cervical and lumbar enlargement appeared normal, but sections of the sciatic showed a diffuse neuritis.

CASE II. John C.; strong, well-developed boy of fourteen, with no history of previous severe illness. Was admitted to L. A. Co. Hospital December 9th, 1890. While coming to Los Angeles the previous March, he was nearly frozen to death by exposure to severe cold near Cheyenne. From that time until the present illness his hands and feet had not felt quite natural, and at times there had been considerable tingling in

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them. A few days before admission he had been out in the rain and had not properly dried and warmed himself afterwards, but went to bed in a cold damp room. The next day while working in the printing office, he noticed that objects appeared double, also that his legs felt weak, and that there was a great increase in the numbness and tingling in his feet and legs. He was obliged to give up work and a few days later was admitted to the hospital. He could then stand unaided on both feet, but on neither one alone. The effort of standing caused great pain, as did any motion of the legs, which were acutely sensitive to pressure over their nerve trunks. He had spasmodic contracture of the muscles, mostly in the calf, which caused great pain; both knee jerks and plantar reflexes absent; decided ankle drop; greatly diminished tactile and muscular sense; temperature and painful impressions more accurately perceived; had the same sensory condition in the hands as in the feet; left external rectus muscle weak; reaction of degeneration in both arms and legs; temperature 100.5, pulse 96. He grew steadily worse; temperature ranged from 100 to 102½; within ten days arms and legs had become wholly paralyzed. A little later the thoracic muscles became involved, but the sphincters remained intact. Respiration was so difficult that for several days it seemed as if he must die. Swallowing became very difficult, and the slightest movement of any part of the body caused intense pain. The muscles of the arms and legs atrophied rapidly, so that when he began to improve, he was a mere skeleton. Convalescence was slow and he was not able to walk unaided for nearly six months. But now, more than four years from the onset, he says he is in perfect health and is working steadily driving a delivery wagon for a coal yard.

CASE III. H. L. W., truckman, aged 49; temperate in habits; has had numerous attacks of sciatica previously. While engaged in doing heavy teaming, he noticed one morning that there was a peculiar tingling and numbness in his hands and feet, and that he had a feeling of great fatigue on attempting to do his ordinary work. These symptoms increased steadily, so that on the third day he was obliged to give up work. I saw him about one week later and found the following condition: Numbness, burning and tingling in both hands and

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feet, and pain so severe that he has been unable to sleep for the past two nights. The dynamometer shows a grip in the left hand of 43 points, in the right 54. In his ordinary health he should be able to carry it above 100 with either hand. He is able to walk about, but it produces a feeling of great fatigue and weakness. Stands with difficulty on one foot alone; the knee jerks are very slight, and it requires a strong faradic current to produce contractions in the leg or forearm muscles. Tactile temperature and muscular senses much impaired in both feet and hands; pain sense fairly active. Under full doses of salicylate of soda, a little phenacetin to relieve the pain, rest and warmth in bed, he has, at the end of a month, nearly recovered. The two other cases were of the acute pernicious type, while the last case was an unusually mild one. Between these two extremes, cases showing widely varying degrees of severity will be found.

In sub-acute cases of multiple neuritis of the ataxic type, there is much resemblance to locomotor-ataxia in the loss of knee jerk and other reflexes, the ataxia, pain, anæsthesia, and the girdle sensation which is sometimes found; but the ataxia is developed earlier, and the pain is of a burning, boring character, increased by pressure, while in locomotor-ataxia it is darting and intermittent, not increased by pressure or motion. In multiple neuritis there is rapid atrophy and reaction of degeneration; in locomotor-ataxia, neither.

Prognosis: In cases of peri-neuritis, which is the usual pathological condition in isolated neuritis, the prognosis is good for restoration of usefulness of the paralyzed parts, and the earlier the return of faradic irritability the more favorable the prognosis for early and complete recovery. There is a great danger of recurrence, and there is usually more or less sensory disturbance, pain and paræsthesiæ remaining, which are aggravated by exposure to cold or over-exertion.

In multiple neuritis, if the patient is young and vigorous, and the cause is one that can be removed, as arsenic, lead, etc., or if the cause has already spent its force, *e. g.*, the effect of cold, over-exertion, diphtheria, etc., and if the paralysis is not complete and does not rapidly extend, and if the constitutional symptoms are not severe—the prognosis is favorable. If on the other hand the patient is past middle age, in feeble

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health, the onset rapid, constitutional disturbance great, paralysis complete and atrophy rapid—the prognosis is unfavorable, especially if there is early extension of the disease to the thorax or to the pneumogastric nerve. Alcoholic cases are unfavorable owing to the difficulty of keeping them from continuing the use of stimulants.

So far as I can learn, and from my own observation, there is no especial liability to recurrence in cases of parenchymatous neuritis.

In the treatment of multiple neuritis, the first thing is, if possible, to remove the cause. And in the majority of cases alcohol is the cause, but the condition of the patient may be such that the abrupt withdrawal of the alcohol would be injudicious. The patient should be kept quiet and warm in bed. Heat applied to the limbs often gives relief to the pain, but great care should be taken not to produce blisters, as owing to the tropic disturbance, heat which produces no discomfort, may be sufficient to cause troublesome blisters. I have found a ten to fifteen per cent solution of menthol in liquid vaseline a soothing external application. After the limbs have been rubbed with this, they may be wrapped in cotton-batting. In the alcoholic cases, digitalis, the cinchona preparations and strychnia are indicated. In cases due to rheumatism or cold the salicylates should be given in full doses in the early stages of the disease. In cases of malarial origin, quinine and arsenic should prove efficient. In the toxæmic cases, iron in full doses should be given. Usually some opiate will be required to relieve the pain. If the heart is not enfeebled the various coal-tar preparations can be tried. If these are contraindicated, the hypodermic injection of cocaine carried into the region of the nerve trunks may be tried. But many cases will require the use of morphine or codeine. To procure sleep at night I have found the combination of morphine and hyoscyamine one of the most efficient. Throughout the acute stage of the disease nutritious, easily digested food should be administered, and the vital powers of the patient sustained as far as possible. The treatment for the later stages of the disease, regardless of the cause, should consist in galvanism or faradism (using that current to which the muscles respond most readily), tonics, iron, the various cinchona preparations,

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strychnia and arsenic. In this connection it should be remembered that the latter sometimes is a cause of neuritis. Probably no drug is so efficient as strychnia, and it should be continued for a long time and in full doses. Massage and judicious exercise are most advantageous. Treatment should be persisted in, especially the use of electricity and massage, until recovery is complete, though this may not take place for many months.

DISCUSSION.

DR. A. W. HOISHOLT, of Stockton, in opening the discussion, said: Dr. Brainerd speaks in his paper of Bell's paralysis, an affection of the facial nerve. I want to mention, in this connection, a case that I have seen within about nine months, which is not very common as regards cause. It was due to pressure, but pressure of a peculiar kind. The case presented symptoms of facial paralysis; there was loss of taste on one side of the tongue; no inequality in the position of the soft palate on the two sides. The hearing was affected, but on examination it was found that there was an abscess in the middle ear, and after puncture of the drum and escape of the pus, the case was cured within five or six weeks. The neuritis was due to the pressure of the pus, and possibly some inflammation set up by the pus collected within the middle ear. It affected the nerve above the place where the chorda tympani is given off. In Dr. Brainerd's paper it is the polyneuritis, or multiple neuritis, that has interested me, as it is sometimes seen in connection with insanity. He mentions a great many forms of multiple neuritis. These forms are probably represented by many different causes for the same disease. Beri-beri is the name of a form which the doctor mentions as occurring in the tropics. A friend of mine, who was an army surgeon in the Dutch army on the Island of Java, and who had charge of a military station some distance from Batavia, told me that he had frequently seen cases of beri-beri, at one time having more than a dozen under his care. These cases usually terminated fatally—very few got well. The disease seemed to attack the young, robust soldiers, while the natives were very seldom affected, and the termination of the disease, where it was fatal, was usually a neuritis of the phrenic nerve which causes dyspnea by interfering with the movements of the diaphragm.

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There is another form of polyneuritis which Dr. Brainerd refers to when he speaks of mercury as a cause. It is only within the last few years that especial attention has been directed to what is known as polyneuritis mercurialis. Dr. Leyden, of Berlin, mentions the case of a young man who had taken the inunction cure for a long time. After stopping this treatment for about three days the usual symptoms of neuritis set in—severe pain, with paralysis in the extremities, ataxic gait, and other symptoms of a disease now generally described as Déjérine's neuro-tabes or peripheral pseudo-tabes. This is nothing but another form of multiple neuritis. With regard to the polyneuritis as it is seen in connection with insanity, it is only during the last few years that it has been described. A Russian physician, Korsakow, reported cases in 1889. He found multiple neuritis associated with mental symptoms which he thought entitled the disease to a place among the different forms of psychoses, and he found that in this form of psychosis there were always symptoms of polyneuritis or multiple neuritis present. It was difficult to determine the beginning of the disease, because it was always associated with severe somatic diseases, such as typhoid, puerperal, tuberculous, cancerous diseases, or a great many forms of intoxication. He found that the mental symptoms went hand in hand with the symptoms of multiple neuritis. There is first, usually, a severe vomiting and great prostration; then, pain sets in in various parts of the body with paralysis of the extensors in the lower extremities, especially of the thigh and toes. This may extend to the upper extremities and attack the extensors of the finger and hand, and even go to the trunk and affect the diaphragm or heart, terminating in death. The symptoms of mental disturbance are very characteristic; amnesia is always present. This amnesia may include not only the period of the disease, but may extend back to some little time prior to it, and in a few instances away into the past, so that the patient will not even know his own name. The mental symptoms begin generally with mental depression—moodiness, followed by agitation and irritability. At this time the patient will still be conscious of what is going on. After awhile the consciousness becomes clouded, resulting finally in a loss of memory. During the stage of excitement attacks of fear often come upon the patient, espe-

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cially in the night, with visual and aural hallucinations. The patient may finally become somnolent, and frequently may die either with symptoms of affection of the phrenic nerve or of the vagus, heart paralysis resulting. Within the past year or two cases have been reported in which cerebral nerves, for instance the vagus, have been found affected like the spinal nerves. In such cases fatty degeneration of the myeline sheath, with atrophy of the axis-cylinder and segmentation of the nerve fiber, are found. The pathological changes have even been traced to the brain, where an atrophy of the ganglion cells, with proliferation of the connective tissue, has been discovered. With regard to duration, this form of psychosis varies greatly; sometimes it lasts but a few months, as Dr. Brainerd mentions. He speaks of the mental symptoms, when he says that dementia is often present. The case may terminate in recovery, even after a year or two. The cause of this form of psychosis due to or connected with multiple neuritis, is a toxic condition of the blood. We find toxic substances suspended in the blood, and it is, therefore, not to be wondered at that we find this polyneuritis is alcoholism. Korsakow has found it to occur in individuals who are not addicted to liquor. He reports 30 cases in alcoholics and 16 in non-alcoholics. Late authors agree that this form of psychosis may occur in individuals who are not addicted to liquor. The pathology of the disease has not been ferreted out, but we always find the symptoms of polyneuritis in connection with these characteristic mental symptoms—this peculiar form of loss of memory. Korsakow has given the disease the name of cerebropathia psychica toxemica.

Dr. C. G. Kuhlman, of San Francisco: The question of primary neuritis is a mooted one. Peripheral neuritis, as a complication of certain diseases, is of quite frequent occurrence, but simple, uncomplicated primary neuritis is denied by some very great authors. I listened in vain for the author to dwell upon the specific causes of neuritis, such as tuberculosis and syphilis. It is my impression that in all cases that have been thoroughly investigated, syphilitic or tubercular changes have been demonstrated as the etiological factor concerned in extensive peripheral neuritis, where we cannot allege some non-septic condition, or where it was a complication of gouty or

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rheumatic conditions. The nerve fibers of the peripheral nerves are extremely immune, as it were, against all the non-specific diseased conditions, such as calcareous deposit. Calcareous and lardaceous deposits are very rare; in fact, it has never been thoroughly demonstrated that these deposits took place within the peripheral nerve tissues. Granulation necrosis, marked by syphilis and tuberculosis and leprosy, have been demonstrated frequently, and also fatty degenerations. Reynaud has described a condition which has received the name of Reynaud's disease, in which he demonstrated peripheral neuritis and a condition which is marked by anæsthesia of the extremities, finally resulting in vaso-motor paresis, due to a central deposit of tubercle. In non-specific neuritis I do not believe in the application of electricity, at least not until the condition is chronic, because we have already an irritable condition, and it would be very easy to intensify that condition by passing electric shocks through the nerve fibers. I think rest is what is indicated in peripheral neuritis, and I think a good many cases of peripheral neuritis are due to over-stimulation or over-irritation by electricity in the primary stage, or the acute stage. I do not think alcohol is a very important factor in peripheral neuritis, except where the neuritis depends upon a central condition, the result of prolonged anæsthesia and irritation.

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SUGGESTION AS A THERAPEUTIC AGENT.

SUPPLEMENTAL REPORT TO COMMITTEE ON NEUROLOGY.

By J. W. ROBERTSON, M. D., Livermore.

In considering the uses of suggestion with reference to its place in therapy, I do not propose to discuss the production of artificial somnambulism, or detail results obtained from the use of methods made popular by Mesmer or Braid, or the still more recent researches of Charcot, Bernheim or Liébault. It is rather with unconscious suggestion—the suggestion that is a part of the daily practice of medicine—which unconsciously deceives both patient and physician, that I will deal.

To properly understand this unnamed and often unnoticed force of which we are the unwitting agents, it is necessary to thoroughly comprehend the influence which the mind is capable of exerting over the body. That it often does exert a powerful influence, none deny; yet but few realize the lengths to which, under certain vices of constitution, this may be carried; and the powerful results for good or evil that may follow. That these influences may at times be prenatal our most scientific psychologists assert; while literature, past and present, as well as common belief, accepts it as a fact.

When Jacob agreed with Laban that his wages should be only that share of the flocks and herds who were ring-stroked and spotted, we learn from holy writ that he proceeded as follows: "Jacob took him rods of green poplar and of the hazel and chestnut tree and pilled white streaks in them, and made the white appear which was in the rods; and he set the rods which he had pilled before the flocks in the gutters in the watering troughs, when the flocks came to drink, that they should conceive when they came to drink; and the flocks conceived before the rods and brought forth cattle ring-streaked, speckled and spotted. And it came to pass whensoever the stronger cattle did conceive that Jacob laid the rods before the eyes of the cattle in the gutters, that they might conceive among

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the rods; but when the cattle were feeble he put them not in, so the feebler were Laban's and the stronger were Jacob's."

We are also told that it was the custom among the Greeks, who were so essentially lovers of beauty, to surround their parturient women with beautiful statues and pictures and to guard them against all that was depressing or deformed.

Spitzka, who is our greatest American authority on such psychological subjects, asserts that " all doubts as to the potency of maternal impressions to affect the shape of the fœtal body and its organs must be dispelled by such positive evidence as is furnished by the two following cases: one, selected from the domain of zoölogy (because of the absence here of many of the objections which might be made to cases observed in the human species), the other from that of an alienist's experience. The one presented before the Zoölogical Society of London was that of a chicken, the beak and feet of which closely resembled those of a parrot. The sender of the specimen said it was only one of several that had been recently hatched, having similar deformities, and further explained that he had, confined near his chicken yard, a parrot that invariably frightened the hens with cries and calls whenever they were fed. The other case was that of a healthy woman, pregnant by a healthy husband, who was badly frightened by suddenly meeting a man without a nose. The child was marked similarly and was born without the slightest vestage of a nasal appendage as well as certain cerebral deformities.

That the mind can so influence the body as to produce organic changes, is well illustrated by a case detailed by Tuke, when a woman saw a heavy weight falling and crushing a child's hand. She fainted, and when restored to consciousness it was found that she had an injury on her own hand, similarly located to that sustained by the child. Not only was there a wound, but it went through the various stages of suppuration and healed by granulation. Other well attested proofs of this power of the mind over the body is that a blister can be raised by mental suggestion alone, as well as the stigmata which undoubtedly occasionally appear on the hands, feet and in the side of certain religious ecstatics who vividly see the crucifixion.

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If the mind can act so powerfully as to inflict actual wounds upon the body, beyond all question it can and does act still more powerfully for the relief of bodily ailments, and especially for the relief of such cases as have hysteria for a basis. To draw a distinction between diseases purely hysterical, and those having an organic basis, is not an easy matter, for hysteria may simulate any disease in our whole nosology.

These mental suggestions, either consciously or unconsciously, have been used as a basis of cure in all ages. They have dominated the practice of medicine in times past, and on them were founded the auguries and charms of the Greeks and Romans, the incantations and witchery of the dark ages, the many "isms," "pathies" and "cures" of modern times, and at the present time may be considered to be the legitimate hand-maiden of the modern scientific practice of the art of medicine. The cure of scrofula by the laying on of kingly hands is no myth, nor are the recoveries placed to the credit of the shrines of saints, either doubtful or miraculous.

Dr. Mackay, in his work on "Popular Delusions," relates that, when the Prince of Orange was besieging the town of Breda, his army became so seriously afflicted with the scurvy as to be threatened with annihilation. When all legitimate remedies failed, he caused a decoction of chamomile, wormwood and camphor to be made and announced it to his army as a wonderful remedy, brought from the East with much danger and toil; and that a single drop of it, mixed with a gallon of water, was an absolute specific for this disease. The result equaled their expectation, and the measure of success was exactly equal to the measure of faith.

The undoubted cures performed by Mesmer before the Faculty of Paris, were due not to any odyllic force, but purely to imagination. His student, de Puysegur, not only equaled his master but, in some ways, excelled; because, not content with curing by personal contact, he magnetized a large oak tree, so that all who could touch its branches and who had sufficient faith to believe they would be cured, went away healed.

The weapon salve of Sir Kenelm Digby, the magnetic plates of Father Hell, the baquet of Mesmer, the de Puysegur faith tree and the metallic tractors of Perkins, all required

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faith as the keystone of cure, and they were but the prototypes of the metallic rings, the electropoise, the Keeley cure, and the thousand and one other contrivances that affect the body simply because they psychologize the mind. During the preceding generation a potato carried in the pocket till reduced to the color and consistency of a rock, was considered an infallible cure for rheumatism. Our generation requires more scientific treatment, and the result is the invention of a finger ring, composed of two metals, which, by their galvanic action, produce sufficient electricity to assuage and finally cure all aches and pains. This is far more scientific than the blackened mummy of a potato, and, in these times, we insist on scientific cures.

Another scientific contrivance, which is highly recommended by many of my most intelligent friends, is the electropoise. This instrument has two poles, one of which is placed in a basin of water outside the window, the other being attached to the patient's big toe. This is usually applied at night. The electropoise, through its outdoor connection absorbs the oxygen from the air, reduces it to ozone, and this is carried, through the toe, into the general circulation. The result is that, if the patient is sick, he is cured; and if he is well he is made to feel better. At all events the patients invariably awake refreshed and invigorated.

Another popular method of obtaining these same results is sometimes known as homœopathy. In this instance, at least if practiced in its original way, very brilliant results frequently follow. An infinitesimal amount of the bone of a cuttle fish or other drug is dissolved in an ocean of water. One drop of this is placed in a glass of water, and the patient is told to take a teaspoonful every five minutes; that, after the first dose, he will begin to feel his symptoms of illness disappear, and in a little while he will be relieved. Believing this, his faith works a miracle, and the wish is father to the fact. This is especially liable to follow when the medicine is of one's own prescribing, and there are many "stepping stones" that give all necessary information. The fact is that the concentration of the mind on the desire to recover, and the determination to feel better, soon dispel every evil symptom.

Possibly the most gigantic and wide reaching mind cure of

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modern times is that known as the shrine cure of Our Lady of Lourdes. The origin of the famous shrine was due to the vision of an ecstatic—a peasant girl of France, Bernadette Soubisous. It is related that, when crossing a small stream, she saw, in a niche of rocks, a female figure of incomparable splendor. This figure had an aureola around her head, and her body was of surpassing brightness. The child saw this vision many times, reported it as the immaculate virgin, and claimed that she was commanded to have a church built there, and a shrine erected for the cure of all diseases. No matter whether this be considered merely as an ecstatic vision or as a real presence, the result has been of incalculable benefit to humanity; for thousands suffering from hysterical joints, tumors and possibly organic diseases, who would otherwise have passed through life chronic invalids, have been restored by faith in the healing virtue of the waters.

A few have solved the riddle; have discovered that there is no such thing as sickness, have roused themselves from their hysterical ailments, and proclaimed that this is due to faith. They will sit for an hour in a darkened closet, meditate over the fact that they are perfectly well, and do manage to throw off many of the aches and pains flesh is heir to. This is properly termed faith cure, though generally known as Christian science; for it seems inherent in the present civilization to dignify the most common terms with esoteric meanings, and to transmute the plain facts into a mystic religion.

But the phase which is most important, and which I wish to directly place before this Society, is the many manifestations of suggestion with which we daily meet in the practice of our profession. As a rule, the young physician has an unbounded faith in the efficacy of drugs, and believes everything he sees in print regarding them, and uses them on his patients indiscriminately. If he is at all observant, he soon realizes that drugs do not always act alike. In fact, such contrary results may follow from the use of the same medicine, that it is necessary for him to take into consideration the personal equation of both himself and his patient, before he can balance his ledger of actual merit. In the course of years his faith in the inherent curative power of nature grows, while his drugs are gradually discarded till his armamentarium comprises but some

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half dozen favorite remedies which he has become so expert in handling that all diseases succumb to their judicious combination. In time, if he be really wise, he will find that in the majority of cases, one single remedy, even if it be water tinctured with the bone of a cuttle fish, is ample for his needs, if he only properly disguises and judiciously administers it. When this stage of evolution is reached, he will join the German school, or will openly express his contempt for drugs, practically ignore therapeutics and direct his attention solely to pathology, etiology and preventive medicine.

German patients may be content with the scientific antemortem attention of their physicians, but in America the demand is that we "do something" and the successful physician is the man amongst us who can "do something," and mentally relieve his patient without doing any positive injury. In other words, the practice of medicine has become an art, and we realize that the most learned is not always the most successful physician. In fact, in medicine as in business life, great learning is sometimes considered a bar to any very great success. This is by no means true except that, in addition to learning, there must be joined a thorough mastery of the art, with a keen insight into human nature.

As a medical student, I had the good fortune to walk the hospitals with one of the truest hearted, most learned and most renowned physicians who has ever practiced in this city, the late Dr. Toland. Though I have seen him prescribe for hundreds of patients, I remember but two of his prescriptions; and I do not remember that he ever varied from them, except with wise suggestions regarding diet and hygiene. One he called "anti-syph," the other "anti-scrof"; and sometimes he showed painful anxiety lest we should carelessly mistake the one for the other. At one time I imagined that they contained the distilled virtues of all that was potent for good in medicine. In my own hands, however, they did injury rather than benefit. In what then consisted their virtue? It was the master, and not the instrument, that brought back the divine harmony of health. In unskilled hands the perfect melody changed to a pathological discord. It was the wise face, the kindly look, the gentle pressure of the hand, the fatherly assurance that all would be well, that constituted the potent factors of his pre-

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scriptions. To him a glance was often a sufficient foundation on which to base a diagnosis, and his patients worshipped this, to them, inspired knowledge, and believed him to be possessed of the marvelous gift. We, who were brought under the kindly influence, knew it to be nothing divine, except as all art is divine. He was wise with the experience of fifty years. The human face was as an open book to him, and his peculiar power was but the crystallization of a vast experience. Like Socrates he was wise in knowing that he was not wise. He recognized his limitations and, above all, was conversant with and master of the various arts of therapy. He knew that it was oftentimes more necessary to properly direct the mind than to drug the body, yet to accomplish the one it was often necessary to resort to the other.

Occasionally it happens that the physician understands neither himself nor his patient, and blunders through his work, ignorant of the underlying principle that governs many of his cures. It is not well to leave everything to nature, though she is oftentimes powerful to cure. The ephemeral fever, the slight depression, the neuralgic pain, will often leave without our aid, yet it is equally true that many chronic conditions can only be dispelled by a doctor's prescription; and that this can be accomplished by the aid of one physician, better than another, not because a different drug is prescribed, but because the one understands his art, the method of approaching his patient, of winning his confidence and inspiring faith, while the other merely drugs. If any of you have a patient who rallies you on the efficacy of your prescription, which he still carries unfilled as a talisman; or, if you have taken the precaution to send the medicine, and he boasts that, untasted, it is working his cure, refrain from again attending one whom you so lightly impress, and leave him to those who can serve him better.

How often the patient, frightened at the possible approach of death, watches the face of his physician, and from the expression there found grows strong with courage, or sinks into still deeper despair. A hopeful air, cheerful and encouraging words, and evident faith in recovery, are often far more efficacious than the best of drugs. The physician who does not inspire confidence and leave his patient in a more cheerful and

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contented frame of mind than he found him, has no moral right to practice medicine; and, in this practice, everything is legitimate that tends to restore confidence. A physician is as necessary to the sick as is a crutch to the cripple, and, if he fails properly to support, he is not true to the trust imposed upon him.

If bread pills will result in a cure, we have no right to resort to harsher drugs; and, by the same reasoning, if our homœopathic brethren can cure by the judicious use of water and sweetened pills, why not give them credit for the good they do and the lesson they teach? I could forgive them much if they would only recognize the basis of their cures, or even follow the teachings of their founder, who asserted that his medicine had attained such specific virtues, that even an occasional smell at an uncorked bottle was sufficient for a cure. But they have become tinctured with our teachings and resort to our harsher drugs, while their lips are still warm with professions of loyalty to the teachings of their founder. It is their professions, and not their drugs, that we criticise.

In conclusion, I will touch briefly upon certain proceedings in the curing of disease, where there is often found the element of suggestion, yet which are so sanctified by usage and are of such every-day occurrence, as to cause little thought of their true value.

In giving hypodermic injections, for instance, we invariably attribute the alleviation of pain to the action of the morphine, yet many times it has been demonstrated that, under certain circumstances, it is the procedure and fact of injection which is responsible for this result, water answering equally as well as the Majendie solution. This was strikingly illustrated but a few weeks ago, when a physician consulted me regarding the alarming aspects of a neuralgic case, which required inordinate doses of morphine to relieve the pain. Though attempting to use the drug moderately, yet he was so urged by the cries of agony and the pleas for relief that, in the course of a few weeks, he had unwittingly increased the daily dose to some twenty grains. I knew the patient to be hysterical, and I believed that the pain was a fiction of the imagination; for no real pain equals the simulated agonies of an hysteric. I suggested the

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use of water in place of morphia, and the result was equally satisfactory.

Above all other remedies, electricity is the one that appeals to the imagination, and very often the effects obtained by an application are purely psychological. It has frequently happened to me, as it must have to you who have much experience with its application, that oftentimes, either through failure to properly connect or other inadvertency of administration, no possible electric current was passable, yet the patient will exhibit all the symptoms heretofore experienced when really receiving large quantities. I have, at a word of suggestion, caused the electrode to burn, the limb to contract, or quiet and sleep, as I willed. Massage and local applications frequently benefit, though their foundations are often solely in the imagination.

Gynecology presents probably the widest field for the study of unconscious suggestion, both in physician and patient. This is due to the fact that the majority of hysterics are found amongst females; and every hysterical woman believes that the source of her disease is either the uterus or ovaries. Consequently the gynecologist has become the popular fad, and no self-respecting woman will accept a diagnosis until her uterine organs have passed a specialist's examination. It seldom happens that some slight displacement of the uterus, some engorgement or thickening of the adjacent tissues, or some ovarian congestion, is not discovered; and the results of a few treatments confirm both patient and physician as to the correctness of the diagnosis. The introduction of the speculum, the local application, the feeling that something is being done for their relief, all tend to their cure. The fear and dislike they feel at placing themselves on the table is compensated for by the cheery assurance that the parts have greatly improved, that the uterus has regained its position or that the engorgement has lessened, and she arises refreshed, hopeful and mentally relieved by the kindly assurances of her physician.

Surgery presents many unrecognized, yet important conditions which properly belong to suggestion. In the administration of the anæsthetic there is great possibility of more or less hypnotic suggestions. It is a well known fact that many capital operations have been performed under suggestion alone,

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without the aid of other anæsthesia. I know of no procedure better calculated to produce the hypnotic sleep, than the manipulation used in the giving of an anæsthetic. The patient's nerves are strung to the utmost tension, the mind is subdued and serious; very often their fright practically paralyzes—in other words hypnotizes—them, even before the actual administration begins. The mind is in an exceedingly receptive condition, and when the towel falls over the face, the strong odor adds to the mental impression. The patient knows that he will soon be unconscious and it often happens that, at the sharp command of "breathe in" and "go to sleep," the patient becomes unconscious; but not necessarily because of the anæsthetic. I do not mean to say that all anæsthesias are hypnotic sleeps, but I am certain that many times the patient becomes suddenly unconscious, sleeps quietly through the operation and does not stir till the anxious surgeon says "wake up!" "you are all right," and at once the eyes are opened and they return to the full possession of their senses.

The use of the knife itself produces powerful impressions and oftentimes results are obtained which are independent of the removal of offending morbid growths. Many an hysterical woman, suffering from a functional neurosis, has submitted to the removal of her ovaries, believing them to be the seat of the disease, and is going through life blissfully unconscious that her disease has been willed and not cut away.

Another surgical procedure, which has suggestion as a basis, is the painless extraction of teeth by using an electric shock at the moment of pulling, and thus diverting the patient's attention. That an ache often leaves as the dentist's office is approached, means more than a mere popular jest.

It occasionally happens that surgeons are deceived by conditions which so closely resemble organic lesions that they undertake an operation and are only undeceived by finding absolutely no morbid condition. Every physician, who has even a limited experience in surgery, will recall cases illustrating this point. I distinctly remember two operations I undertook, one for a supposed periostitis, the other for a neuroma of the toe, which I now know was purely a reflex pain. Both operations resulted in at least a temporary cure of my patients,

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though in neither did I find the slightest pathological alteration of tissue.

By special request of two prominent San Francisco surgeons I further illustate this point with cases taken from their practice. Two years ago Dr. Shiels presented before this Society a series of trephining operations where the vortex had been scraped for the cure of epilepsy. He believed that he had discovered a new operation that would result in the salvation of many whose affliction was worse than death. Happening, for other reasons, to be compelled to perform this operation on an epileptic, the improvement was so marked that he felt justified in attempting it on another case that had resisted all other treatment. So successful were these that he attempted two others; and in all there were apparently brilliant cures. He made a tentative report and awaited results. Epilepsy is a treacherous disease which may or may not have an organic basis, and any operation, from a severe blister to the amputation of a leg, will be sufficient by the mental impression they produce to hold the fits in abeyance for a certain length of time. So it happened in these cases and he now reports relapses in all of them.

Another case reported from one of the large hospitals. The patient was a girl, 13 years of age, of a nervous and highly excitable temperament and had been unduly assiduous in her studies. Coming home from school she tripped and immediately felt a sharp pain in her hip, and, for several days, was slightly lame. A few days later, after taking exercise, she suddenly experienced excruciating pains in the hip-joint and her leg and foot assumed the position of complete dislocation. There had been, apparently, partial, followed by complete, luxation. Unsuccessful attempts were made to reduce this luxation and a month elapsed before she was sent to the hospital. The position of the limb, the paralysis and the atrophy render diagnosis so certain and the pain on the slightest manipulation was so great that it was considered advisable to operate at once and not inflict further injury on the tissue. As a month had elapsed it was fairly certain that the acetabulum was filled with a new growth and the operation was for the purpose of removing this, and replacing the head of the femur. So excruciating was the slightest motion that it was

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found necessary to anæsthetize the patient before leaving her bed. An incision was made over the head of the bone, but it was at once discovered that it was in perfect position. It was simply an hysterical joint. The wound was closed and the patient on recovering consciousness, was assured that the operation had been successful. That afternoon she could move the foot, and in the course of a few days, thoroughly regained the use of her leg.

Time will not allow me to further illustrate the important relation that suggestion bears to all branches of medicine. It certainly is a dominant factor in many cures, and so powerful a weapon is it, that we need feel no shame, either in recognizing it, or cultivating the art and practicing it under proper limitations.

DISCUSSION.

DR. E. H. WOOLSEY, of Oakland: Personally, and on behalf of a great many members of the profession, I protest against the acceptance of such views as those presented by Dr. Robertson.

DR. G. F. SHIELS, of San Francisco: I endorse certain facts stated in the paper. Sometime since I thought I discovered a cure for epilepsy, but found I had not done so, and I quite agreed with Dr. Robertson that the cases he mentions, and upon which I operated, were cases of suggestion. In cases where patients had imaginary tumors in the abdomen, I have, on one occasion, cut down through the skin of a patient who was supposed to have a tumor in the descending colon. He thought so, and so did some of the doctors. I did not agree with them, and made a suggestive incision through the skin below the umbilicus, stitched it up, put him in bed, treated him as if he had been the subject of an abdominal section, and the tumor disappeared. That is an endorsement of some of the statements made by Dr. Robertson. I cannot forget the fact that this is so, and I think he has courage in getting up before a society of scientific men and pointing out that there is a great deal in our profession that belongs to the realm of suggestive medicine. Only two years ago the doctor showed us, beyond all question of doubt, that the Keeley cure was nothing more nor less than an example of suggestive medicine. The paper, perhaps, goes a little too far, but it is better to be

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a little dogmatic and a little overstrung in one's statement if you can bring about a good result.

DR. WOOLSEY, of Oakland: The Keeley cure is hardly suggestive medicine. I have investigated it somewhat. The paper seems to be very well thought out and prepared, along the lines followed by Dr. Robertson, but I think those lines are faulty lines, and they are not in scientific channels, and are not *en rapport* with scientific medicine. They are rather in harmony with quackery, and along the lines of quackery, and far away from those of legitimate medicine. The idea just expressed, most emphatically, that anything is legitimate in the treatment of a case, I think strictly in line with quackery. The spectacle of older physicians getting away from the strict lines of physiology and therapeutics is a melancholy one. I think I showed that electricity is always hurtful or helpful and that it does not belong to suggestive medicine; that it is as potent an agent for harm as it is for good, and is no more in the line of suggestion than is morphine, or atropine, or iodide of potassium, or quinine, or any other therapeutic agent, and that in all cases it does either good or harm. The idea of the electro-poise doing anybody any good by the absorption of oxygen is the basest fallacy. Electricity does not gather up oxygen from a pan of water and carry it into a man's foot. That is the greatest absurdity on earth.

DR. ROBERTSON, of Livermore, in replying, said: Dr. Woolsey is well known to be an able physician; a man whose brain is still in the zenith of its power. Is it possible he imagines for a moment I support the electro-poise or believe that it does produce oxygen out of the atmosphere? I gave that as an illustration of the fact that people are often affected by various kinds of "isms" and "pathies," and that people are often cured, not by the efficacy of drugs, but simply because of the bare fact that the mind is acted upon. In other words, that it was suggestion, and not medicine. It was simply manipulations, and very often not the medicine that they were using, or the surgical procedure that was resorted to, that resulted in cure. Above all things, I do not want to be considered as believing in operations by gynecologists for purely mythical diseases. I consider it one of the greatest disgraces of our

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profession, as at present conducted. The way women submit themselves to gynecologists, and the number of operations performed, is outrageous. All these things could be accomplished without the operations. I simply gave that as a proof of the fact that all medicine is full of suggestion, and that very often it is not the medicine nor the surgical procedure that cures, but the mental effect produced by them.

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Medical Jurisprudence.

A FEW REMARKS ON THE STATUS OF THE MEDICAL EXPERT WITNESS.

REPORT OF THE COMMITTEE ON MEDICAL JURISPRUDENCE.

By GEORGE FRANKLIN SHIELS, M. D., Chairman, San Francisco.

There is probably no subject in the medical curriculum which is so little taught as medical jurisprudence, and no branch of this subject which is so much neglected as that which deals with medical evidence. The result is that the young graduate begins practice with no knowledge of this important subject and if he be lucky may go through life without being placed in a position to regret his lack of learning; on the other hand he may at any moment be called into Court as an expert witness and in the hands of a clever lawyer may be made an object of ridicule. It is not, however, the purpose of the present paper to suggest to the members of the Society the necessity of study in this department of medicine, but rather to discuss the status of the medical expert witness before our Courts.

Before going further it will be necessary to make clear the distinction between a witness as to fact and an expert or opinion witness, since the laws which govern these classes are, or shall I say ought to be, widely different. A witness as to fact is one who sees, hears or knows either actual facts connected with the case at issue, or facts from which legal inferences applicable to the case may be drawn. This witness, whether ignorant or learned, poor or rich, old or young, must give evidence when called upon, and should he refuse to answer questions which the Court rules proper to be answered he is liable to punishment for contempt of Court. The expert witness is

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one who, through especial study or experience, is particularly instructed in some art or trade, and may give his opinions on questions of science or skill relating to such art or trade.

Now, since every business or employment which has a particular class devoted to its pursuit is an art or trade in the legal sense, it can be readily understood that a medical man, when called upon to give his opinion evidence connected with his profession is an expert witness. This is generally understood and recognized, and it is a common practice for lawyers to introduce such experts in trials where their opinions may be of value to one or other of the contesting parties.

PHASE I.—Having established the fact that a physician, when called to give opinion evidence, is an expert, the first phase of the question to which I will direct your attention is the following:

(1) Can a medical expert be subpœnaed and forced to give opinion evidence without being paid a fee, and, should he refuse to give such evidence, can be held to be guilty of contempt of Court?

(2) Can a medical man when subpœnaed as a witness as to fact during his examination be forced to give opinion evidence without being paid a fee, and, should he refuse to give such evidence, can he be held to be guilty of contempt of Court?

[*Note.*—Let me say here that the above examples are entirely different; in the first case the physician is called solely as an expert; in the second, he is subpœnaed, because for instance he saw a man shot, and during his examination the attorney directs his questions to obtain opinion evidence concerning the effects and nature of gunshot wounds. There is no question as to the witness having to testify concerning the shooting itself, but the question is as to whether he can be made to give opinion evidence on gunshot wounds.]

In civil cases these questions rarely arise, since the attorneys usually call upon the witness and make a definite business arrangement with him regarding his fee, but in criminal procedures it would seem a common source of misunderstanding and trouble.

With a view of clearing up the matter I have made a somewhat extensive investigation, and, instead of finding law and order, I found, as will soon be seen, absolute chaos. Judges

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disagreeing with judges, attorneys with attorneys, authorities with authorities, and all claiming that they are right.

The common law of England, which, modified by statutes, is the law of the various States of the Union, has clearly established the fact that the scientific or expert witness must be paid, and Mr. Justice Maule said in the case of Webb *v.* Page, where this point was at issue, "There is a distinction between the case of a man who sees a fact and is called to prove it in a court of law, and a man who is selected by a party to give his opinion on a matter on which he is peculiarly conversant from the nature of his employment in life. The former is bound as a matter of public duty to speak to a fact which happens to have fallen within his own knowledge; without such testimony the course of justice must be stopped. The latter is under no such obligation, there is no such necessity for his evidence and the party who selects him must pay for him."

This view is sustained both by the practice in the courts and by the writers on medical jurisprudence. In Taylor's Medical Jurisprudence, which is the recognized court authority, we find the following: "Before being sworn to deliver his evidence a medical or scientific witness may claim the payment of his customary fees, unless an arrangement has been made between him and the solicitors who have sent him the subpœna. These fees are generally made a matter of private arrangement between the witness and the attorney."

This seems right and just, and it would appear that if it be true in English law, then it must be true in American law, and in the law of California, unless there be an especial statute to the contrary. There is no such statute, and yet the rulings in these cases do not in any way correspond with the plain logic of the above statements, since those of the Superior Courts and even of the Supreme Courts are at variance. So much do they vary that such authorities as Lawson on Expert Testimony, and Rogers on the same subject, plainly state that the question must be regarded as still an open one. The only two points which are clearly defined are the following:

(*a*) An expert need not make a preliminary examination of a case unless special compensation is made. (*b*) An ex-

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pert cannot be required to attend throughout an entire trial for the purpose of listening to the testimony without special compensation.

In order to give the members of the Society a clearer understanding of the matter, permit me to give a brief resumé of the authorities on either side.

For Extra Compensation.—In Buchannan *v.* State (59 Ind., 1 (1–77), one H. being on trial for rape, a physician being asked a medical opinion refused to answer unless compensated for his opinion. The Trial Court held that he was bound to answer without compensation, other than the ordinary witness fee, and the physician, persisting in his refusal, was committed for contempt. On appeal to the Supreme Court the commitment was held erroneous.

"While a physician or surgeon," the Court said, "could be requested to attend as a witness to facts without other compensation than that provided by law for other witnesses, yet he could not be required to testify as to his professional opinion without the compensation of a professional fee. The professional knowledge of an attorney or physician is to be regarded in the light of property and his professional services are no more at the mercy of the public as to remuneration than are the goods of the merchant, or the crops of the farmer, or the wares of the mechanic."

This decision clearly voices the opinion of those who view the matter in this light and was supported by an exhaustive review of the authorities which may be found in full in Lawson on "Expert and Opinion Evidence," pp. 259–263.

Further in support of the above may be mentioned:

(1) U. S. *v.* Howe, decided in U. S. District Court for District of Arkansas in 1881. The same conclusion was reached.

(2) Additional compensation is allowed for expert evidence by statute in Iowa, North Carolina and Rhode Island.

Against Extra Compensation.—In *Ex parte* Dement (53 Alabama, 389), decided in 1875, the prisoner on trial was charged with murder and a physician, after testifying that he had seen the deceased after he had received the wound which the prosecution asserted had produced death, was asked to state the nature and character of the wound received and its probable effect. This he declined to do upon the ground that "he had

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not been remunerated for his professional opinion nor had compensation for his professional opinion been promised or secured." A fine was thereupon imposed upon him for contempt of Court and the action of the Trial Court was sustained on appeal.

The authorities quoted in the Supreme Court in guiding their decision well represent the views of those who support this aspect of the subject and will be found in Rogers on Expert Testimony, pp. 433–437.

A very recent decision on the same lines will be found in the *Central Law Journal* for March 22nd, 1895, where the Supreme Court of Arkansas (in Flin *v.* Prairie County, 29 So. Rep., 459) decides that an expert who testifies for the State in a criminal case cannot demand compensation in addition to the usual fees allowed witnesses, provided he is not compelled to make any preliminary examination or preparation, and is not compelled to attend Court and listen to testimony. The Court says: "We have no statute authorizing the payment of extra compensation of experts. Our statute makes no distinction between different classes of witnesses. In the absence of a statute regulating it, the question is one of some doubt, for the decisions of the courts of the different States upon it are very conflicting." The Court decides that in the absence of a statute regulating expert evidence a physician called upon to give opinion evidence must be ruled by the statute relative to ordinary witnesses.

Finding the authorities in such an undecided condition, I thought it wise to interview a select number of our leading jurists, including several judges and ex-judges of the Superior Court.

Before proceeding to consider the information so derived, I desire to take this opportunity of publicly thanking these gentlemen for their uniform and unvarying courtesy and, in most cases, for the lively interest evinced in my investigation.

Though there is nothing like an harmonious concensus, but, on the contrary, rather a confliction of opinions from which it is difficult to draw conclusions, the results of these interviews may be tabulated somewhat as follows:

(1) That in civil cases the medical expert opinion witness can demand the payment of an especial fee.

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(2) Regarding the matter as individuals learned in the principles of law, the gentlemen interviewed are of the opinion that medical expert witnesses should be paid for their professional opinions in all cases.

(3) Viewing the matter as judges in the Courts of California and as attorneys practicing at the California bar, that in criminal cases in the absence of an especial statute and in the presence of a preponderance of precedent, the medical expert witness must give his testimony without other than the fee provided for ordinary witnesses by statute.

To sum up this phase of the subject:—From the authorities and the personal interviews all that I have gained is the knowledge that the cases are not in harmony, that the cases are nearly balanced, that the question is still an open one and finally that the preponderance of authority rather inclines to the theory that the expert may be required to answer without additional compensation; and that if he claims that an exception exists exempting him from the general rule which requires all witnesses on the payment of the fees allowed by statute to testify as to matters within their knowledge, then the burden is on him to establish the exception.

PHASE II. The second phase of the question of medical expert testimony to which I shall venture to invite your attention is that which relates to its value.

Expert testimony is no more conclusive upon the jury than the testimony of witnesses as to facts, and no matter how learnedly a medical man may discant upon a technical point, the jury has a perfect right to accept or reject any or all of the evidence given by such opinion witnesses. However, judges will as a rule instruct juries that expert evidence, if from a high source and if delivered without bias and with proper caution, must be given great weight.

For my own part I beg to say that medical expert testimony as now introduced can be of little value and for these reasons: There are few men who, when employed in the interest of a corporation or an individual, can resist the tendency to bias, and I have actually seen cases where such witnesses have sworn to opinions to which in calmer moments, when free from bias, they simply could not give their support.

Again it is almost laughable to hear the flat contradictions

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which occur where medical experts are put on the stand by contesting parties, and it must lead the intelligent mind to formulate a very poor opinion of our profession. Certainly were I on a jury which had to consider such evidence I should give it little or no weight.

Further, since to be a doctor is a sufficient argument for establishing a man as a medical expert witness, you can readily see how a graduate of a two year irregular college can by contradicting it, cause a jury to practically throw out the opinion evidence of even a weighty authority.

But, Mr. President and fellow members, expert medical testimony could be made of the greatest value in forwarding justice in many cases were it properly introduced, and I should like to suggest for your best consideration the following plans, either of which I believe would be entirely feasible. Either

(1) Let the attorneys of each side select two experts and let the four so chosen select a fifth. This scientific jury could after careful deliberation bring in a full and useful report on any technical point which might arise. Or

(2) Leave the matter entirely in the hands of the Court who could call one or a dozen medical men to elucidate any technical points which might need clearing up.

I incline strongly to favor the Court having the power, since it would entirely do away with the possibility of partisanship, provided always that the Court is what it should be, learned, dignified, absolutely impersonal, and above reproach.

PHASE III. The third and last phase of this question of which I shall speak is as to the advisability of having an especial statute enacted by our Legislature, providing for the payment of extra compensation for expert opinion witnesses.

Believing firmly in the justice and law of such extra compensation, and feeling that we are under a hardship when forced to give the results of our life's study on demand and for nothing, and remembering the indignities and even the imprisonment which have been meted out to medical men who have refused to be subjected to a kind of legal robbery (witness the cases of Dr. Mays and of Dr. H. H. Berndt), I shall beg this Society to appoint an especial committee who shall consult the lawyers, who have all endorsed the plan of legislation, with a view of having our next Legislature enact a

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statute which I believe could not read better than the one provided in Minnesota: "That the judge of any Court of Record in this State, before whom any witness is summoned or sworn and examined as an expert in any profession or calling, may in his discretion allow such fees or compensation as in his judgment may be just and reasonable." If constitutional I should add that all experts be called by the Court, when it shall deem expert opinion necessary for the furtherance of justice.

It may be urged that my plan places too much power in the hands of the judge. I do not think so. The more responsibility and power vested in the judicial office, the more readily will the man sink his own personality and rise to a full appreciation of the grave, dignified, honorable nature of the position which the people have called upon him to occupy, and the confidence placed in him will be a sacred and inviolable trust which nothing could cause him for an instant to forget.

DISCUSSION.

DR. W. E. TAYLOR, of San Francisco, in opening the discussion, said: I have listened with pleasure and I hope with profit to the paper which has just been read. I think the doctor is to be congratulated upon presenting this very important matter so fully and forcibly to the members of this Society, and through them to the medical profession of the State. There is no question that this matter is one of the greatest importance to every medical man. In some States the ideas which Dr. Shiels has developed are followed, but in a majority of the States the medical expert has no chance for remuneration. It does seem hard that a medical man who has devoted his lifetime perhaps to one particular subject should be called upon to give up his property, his personal property, acquired after years of study and expenditure of brain and money, for nothing. As far as I know no other profession or trade is required to do that, and I am fully in accord with that paper. Now as to medical experts: It is laughable and sometimes pitiable to see three or four medical gentlemen, all occupying a high position in the community, arrayed on opposite sides of a question. One gentleman gets up and gives his opinion. It is contradicted flatly and point blank by another of supposed equal ability. Therefore, those who are not posted are dis-

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posed to laugh at the medical expert, and the result is that men are often accused of being bought. How often do we hear that expression, that so and so was bought to go on the stand and prostitute his profession for dollars and cents. I do not believe that that is so in as many cases as we are led to believe. We all know that in any medical subject, no matter what, there is great opportunity for a vast variety of opinion. Very often an opinion is wormed out of a physician by a suave attorney who has approached him before he really knows what the facts are; he goes on the stand and gives his opinion, and the man opposed to him gives a contrary opinion, and the result is that the testimony amounts to *nil.* The last proposition which the author has made is, I think, decidedly the better one for overcoming this difficulty. Some years ago I had quite a discussion with a famous judge, now long since dead, and his theory was that the Court should call the medical expert, who should in nowise be a partisan, and who should sit alongside the judge on the bench in order to give him the proper information. I believe that that is the proper way and the only way. Some members of the legal profession have told me that this method would not do, because it places so much power in the hands of the judge that he might be accused of partisanship. But I think it would be a good idea. I suggest that the President of this Society appoint a committee, of which Dr. Shiels should be a member, which would consult with other medical men and also with prominent lawyers, who I understand are willing to give their opinions, and draw up a statute to be submitted to the next Legislature, which will define the status of the medical expert. It should be made positive that he shall be compensated for his services, and it should also place in the hands of the judge the power to summon one or more experts, and let the judge, in the absence of any law, decide what their compensation should be. Medical expert testimony, even when given with the very best intent, is often stripped of its value by the trickery of the lawyer on the opposite side. I well remember when I was coroner of this city holding an inquest upon the body of a woman who was supposed to have been killed by her husband. I am convinced now, as I was then, that the man was innocent and that the woman committed suicide. I had every reason to be-

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lieve it. He was put on trial for his life. I think I was present at two or three trials—all of them, anyhow—because I believed the man was innocent, and I wanted to get a chance to give my opinion as an expert; that was what I was summoned there for. I was asked whether in my opinion that was a case of suicide or homicide, and the question was objected to by the prosecuting attorney. The judge sustained the objection, and said it was a matter for the jury. I couldn't see what I was there for, and I have not found out yet; nor could I by any means get in my opinion as an expert in gunshot wounds that that was a suicidal wound, and although the man was on trial for murder, the intelligent jury rendered a verdict of manslaughter, and he is up in Folsom now serving out his sentence. It does seem to me that the statute should not only provide for the compensation of the medical expert, but should define his power as far as possible so that he will not be cut off; so that his opinion, if it has any value at all, shall not be taken away from him. We all come in contact with this thing every day. Some of our members have been imprisoned and others have been subjected to various indignities on account of this thing. I do hope that the matter will have a full and free discussion by members of the Society, for there is no other question before us to-day, outside of purely medical treatment, of any more importance than this one, and I hope that such legislation will be enacted as will take us out of this slough of despond.

Dr. W. H. Mays, of San Francisco: I am sure we all appreciate the able and vigorous paper of Dr. Shiels on this important subject. I think Dr. Shiels has struck the key-note in urging that this Society appoint a committee to draw up some statute governing this subject. The whole matter is at present in a very chaotic condition. I will not attempt to go through all the points of Dr. Shiels' paper, but I will simply say that in any expert work which I have done in this city I have always found the judges very willing to afford proper compensation. The fault lies with the Board of Supervisors, who invariably cut down the bills from one-third to one-half. The deplorable spectacle mentioned by Dr. Shiels of one reputable physician going on the stand and giving his opinion under oath, and another going on the same stand giving an

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opinion diametrically opposite, is one that the whole profession ought to deplore. It is one that cannot fail to bring our profession into disrepute, and I think that is one reason why this matter is in its present unsettled condition. I think by far the better plan would be to allow the judges to call the medical testimony, if it could be so arranged, and leave it entirely in their hands. I favor very strongly the proposition to have a committee appointed to take this matter under advisement.

DR. H. G. BRAINERD, of Los Angeles: It seems to me it would be better to have the judge call the expert in civil as well as in criminal cases. An expert in a civil case is taken to the office of the lawyer, who goes over the case with him carefully and gives him a review of it, bringing out all the facts to support that. All the facts on the opposite side are smothered and kept in the dark, and the same fault would apply in civil cases as in criminal cases, more markedly perhaps in criminal cases, and it seems to me it would be wise to follow Dr. Shiels' suggestion in regard to civil suits as well as criminal suits, and allow the Court to call the expert in all those cases.

DR. W. WATT KERR, of San Francisco: The reason why you get conflicting answers from the medical experts lies simply in the fact that the attorney for one side forms a hypothetical question, generally with the assistance of his medical expert, who answers it for the benefit of that side, as he himself formulated the question. Then comes a hypothetical question formed by the opposite side, setting forth the views of that side, and naturally the expert for that side answers directly contrary to the expert put on by the other side. In this way we have a great deal of conflicting evidence. Sometime ago, I think by Dr. Washington Ayer, a similar proposition was made to that proposed by Dr. Shiels, whereby the Committee on Legislation was to endeavor to have a law passed so that all expert questions in court would be referred to a jury of medical men. Unfortunately the matter fell through, because the meeting of the Legislature took place before the Society again convened. I think the better plan would be to again refer this to the Committee on Medical Legislation, of which we could retain the present chairman of the committee for another year or two,

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if the Society sees fit, and let the committee draft a bill which can be presented to this Society at its next meeting as a part of their report. It can then receive the endorsement of this Society, and it will be ready to present at the next meeting of the Legislature. I would therefore move that the suggestions of Dr. Shiels be now referred to the Executive Committee, so that they can refer it to the proper committee on legislation, so that it will not be lost sight of, as it was on the former occasion.

DR. J. R. LAINE, of Sacramento: If the Court calls in five expert witnesses you do not do away with the question of partisanship, and with the serious question as to how far their decision will go. The decision of the five medical experts must go to the jury for what it is worth; it cannot settle the question, as I understand it. Again, if you simply call up one or two and pay them it does not help the matter any; they may be biased, nevertheless. I am in favor of one thing, and that is, that medical expert witnesses shall be paid for their services and let their testimony go before the jury for what it is worth, as it must necessarily do. If you are to formulate the matter proposed into law it will be necessary first to introduce a resolution here and let us pass upon it now or at some future session of this Society.

DR. G. F. SHIELS, in replying, said: I do not want medical legislation. What I ask you to do is to appoint a committee who shall meet with lawyers and judges who have signified their willingness—men like D. M. Delmas, Grove L. Johnson, Judge Hunt, Judge Slack, and others of that type—who are willing to assist in drawing up a statute to apply to expert witnesses. I don't want medical legislation; it is a farce and always will be a farce. I want a statute to apply to expert testimony generally, whether it is that of mining engineers, pastry cooks, machinists or medical men. Medical legislation is a farce, because it legislates for a small class. As regards the value of medical expert testimony, we all recognize the fact that it is to be dealt with by the jury, as other testimony. I pointed that out in my paper. If you have two medical men, each of equal standing, who give opposite opinions, of course it is perfectly competent for the jury to weigh their testimony and cast it all out or keep what they like. The jury has a

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right to deal with the most dogmatic medical statement and say it is not worth anything.

THE PRESIDENT: I would like to say a word on the subject. We have a society in Sacramento, the oldest in the State, and probably one of the most successful in this; that a larger majority of the practitioners of that place belong to the society than any place in the United States. We practically have the whole profession in our society. At a very early period this whole matter of the injustice and need of a change in our system of judicature was debated in that society. We all felt the injustice of it to such a degree that we decided whenever called upon as experts to give our testimony, where we knew nothing of the facts, that we would refuse to answer. I happened to be the first man called in that relation. I went to jail constructively. The matter at that time was taken out of the hands of the lower Court, and it was decided by the Supreme Court—not the same Court that we have now—for that was at a period when there was a District Court in another relation to the lower Court; and the judges decided in that Court that the doctor's relation to the community was such that he was obliged to answer as an expert; to give his time, to give his knowledge for the benefit of the State. After that our society went to work and acted upon the Legislature, and if Dr. Shiels, or some of his legal friends had happened to have looked through the proceedings of that section of the State, they would have found out that a law was passed allowing judges to say what compensation experts should have. That law was in existence for a few years—so long ago that I have quite forgotten the length of time, but it was the law, and some of us got reasonable fees as experts. When the Code Commission, with Creed Haymond at its head, took up our system, that was expunged, and from that time we were subjected to the old injustice. I am very much in favor of the doctor's plan; I hope it will succeed. I merely mention this matter as one of history.

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Anatomy.

THE ANATOMY OF THE WRIST AND HAND, WITH REFERENCE TO CUTS AND CRUSHES.

REPORT OF THE COMMITTEE ON ANATOMY.

By GEO. B. SOMERS, M. D., Chairman, San Francisco.

Anatomy is a mass of facts. The work of collecting them has progressed so steadily and satisfactorily that the opportunities of adding new ones to the number have become limited. The inducements, therefore, for carrying out original investigations in the subject are small, and students appear to take little interest in this particular line of work. On the other hand, from a practical standpoint, the innumerable facts of anatomy attract endless interest, for the complicated operations rendered possible by modern surgical methods, necessitate careful study of anatomical facts. As a result the relative importance of anatomy as a factor in medical education is gradually increasing, and it is found that as one false concept after another is swept away from the domains of medicine and surgery, anatomy remains as the unchanging rock in the foundation of medical knowledge.

In accidental surgery no injuries are more frequently met with than those of the hands. The great majority of men depend upon their hands to gain their daily bread. Every line of these useful appendages is valuable, and after an injury it is of the utmost importance to save as much of them as possible, compatible with usefulness. Generally the treatment of hand injuries is considered as belonging to minor surgery, and not of enough importance to demand accurate anatomical knowledge. But the union of a tendon, the preservation of

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a point of insertion for a tendon or the saving of a nerve may make a vast difference in the usefulness of the hand. Again, the numerous tendons, small bones, blood vessels and nerves of these parts and their complicated management, render the anatomy of the hands by no means simple. There are, then, three good reasons for deeming the anatomy of the hand worthy the careful study of every practitioner. They are the frequency of injuries, the importance of the parts and their complicated structure.

I have selected below a few points which seem to me of practical importance. Though they are simple anatomical facts, they were not always remembered when most needed, neither was their practical importance thoroughly appreciated until after considerable experience in the treatment of hand injuries.

In crushes of the phalanges, where amputations through the joints are necessary, much time is saved if we are able to locate exactly and at once the position of the various articulations. It is apparently a simple matter to find them, but the line of union is so close that unless we are sure of the location, the knife will fail to enter the joint until after considerable search. The relations of these joints to the folds on the palmar surface must be remembered, also their position with reference to the knuckles on the dorsal surface. These knuckles are made, in each of the fingers, by the prominence of the rounded extremity of the proximal bone. Thus the prominence of the metacarpo-phalangeal articulation is made by the metacarpal bone. In each case the joint lies below the prominence, the joints in the last row of phalanges being one-twelfth of an inch below the most projecting part of the knuckles, the joint in the middle row one-sixth of an inch and in the metacarpo-phalangeal joint one-third of an inch below. With reference to the web between the fingers on the palmar surface, the location of the metacarpo-phalangeal joint is three-quarters of an inch behind the free edge. The location of the metacarpo-phalangeal joint of the index finger is more exactly indicated by the outer termination of the first crease across the palm.

A practical point in reference to amputations through the phalangeal and metacarpal bones depends on their structure. These bones are constructed like long bones, containing can-

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cellous tissue at the extremities and compact tissue along the shafts. In cutting through them, the bone-cutting forceps may be used safely and conveniently on the cancellous ends, but if used on the shafts, the compact tissue is likely to split longitudinally, necessitating re-amputation at a higher point than originally intended. The rule should be to use a small saw on the shafts of all these bones, except perhaps the terminal phalanges, which are so small and contain so large a proportion of cancellous tissue, that they may be most quickly divided with forceps.

When it is found necessary to remove the metacarpal bones after crushes, the fourth and fifth may be removed at the carpal articulation, but the bases of the second and third should be preserved if possible, for the base of the second gives attachment to two important tendons, namely, the radial flexor and the long radial extensor of the wrist joint. The base of the third gives insertion to two muscles of the thumb and one of the wrist, namely, the adductor and short flexor thumb muscles and the short radial extensor of the wrist. The insertions of these tendons should be preserved for they control important motions.

The importance of the carpal bones depends on the presence of metacarpals. They afford attachments to no muscles or tendons not connected with the metacarpal bones, except the pisiform, to which the ulnar flexor of the wrist is attached. If any metacarpal bones are retained after a crush it is better to preserve as many of the carpals as possible in order to serve as braces and in order to facilitate motion.

The finding of the severed ends of tendons requires greater anatomical accuracy than any other surgical procedure about the hands. Frequently after cuts and crushes, the relations of the parts are so altered that it is difficult to recognize the various structures. In the union of severed parts, the identification of the various tendons is obviously of the first importance. In the palm of the hand the superficial flexors may be distinguished from the deep, in a general way, by the fact that the latter present along their course the fleshy fibers of the lumbrical muscles, whereas the superficial tendons are free from muscle fibers. Above the wrist also, muscle fibers are seen in contact with the deep tendons as far as the upper border of

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the annular ligament, whereas the tendons of all the superficial flexors, excepting that to the middle finger, becomes free from muscle tissue some distance above the annular ligament.

Of the tendons to the thumb the long extensor is most frequently injured. When severed anywhere below the styloid process of the radius, it is at times extremely difficult to find the proximal end, owing to the distance which it retracts. But there is one landmark by which it may be easily found. On the posterior surface of the lower end of the radius, a little protuberance of bone may be felt, which serves as a brace round which the tendon turns in passing up the arm. A longitudinal incision about an inch in length just to the ulnar side of this point will reveal the sheath of this tendon. The other extensor tendons of the thumb if cut below the styloid process of the radius are more easily found. They lie in a line drawn from the tip of the radial styloid process, upward and backward to the dorsal surface of the forearm, making an angle of about forty-five degrees with the long axis of the radius.

In injuries or operations near the pisiform bone, the ulnar artery is not the only important structure to be avoided. The deep branch of the ulnar nerve is particularly worthy of attention. It runs from the pisiform bone across the palm of the hand, following the deep palmar arch. Besides several lumbrical and interosseous muscles, it supplies the adductor and short flexor muscles of the thumb. Division of this nerve means impairment of important motions of the thumb. The nerve and deep palmar arch run across the bases of the metacarpal bones. Consequently in disarticulating these bones the nerve is in danger of being severed, and if a crush, say of the ulnar side of the hand, should necessitate the removal of one or more metacarpal bones, the resection at the carpo-metacarpal joint should be done with due allowance for the presence of a nerve which supplies parts on the opposite or radial side of the hand.

In conclusion I will offer no apology for the simplicity of the matter presented in this paper nor for the practical points that have not been touched upon, but wish what has been said to stand as a plea for a more careful study of the anatomy of the hands and a higher estimate of their value.

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DISCUSSION.

DR. J. HENRY BARBAT, of San Francisco, in opening the discussion, said: Dr. Somers is to be congratulated for being the first who ever handed in a committee report on anatomy. There is one point I might mention regarding the anatomical relation of the flexor tendons in injuries necessitating the suture of the divided tendons. In a case where the superficial flexor tendon of the middle finger had been cut through two months previously, great difficulty was experienced in finding the proximal end of the divided tendon. I finally succeeded by forcibly extending the three sound fingers, which pulled down the flexor tendon as a whole, and also carried down the divided tendon, which was a part of the flexor sublimis digitorum; and, undoubtedly, without this method we would not have secured it without slitting through the anterior annular ligament, as the tendon was severed near the wrist. By flexing the finger to which the divided tendon belonged, the distal end was easily secured and the two ends sewed together. The hand was bandaged in this position and a perfect result obtained. I am sorry that Dr. Somers did not touch on the anatomy of the hand with regard to inflammatory conditions, as it is there that anatomical knowledge plays a most important part. We have next the skin the deep palmar fascia, which may be regarded as an expansion of the tendon of the palmaris longus muscle, this fascia covering almost the entire palm of the hand and being attached by two slips to the sides of each metacarpo-phalangeal articulation. Accumulations of pus beneath this fascia require very free and early opening to prevent dissection by accumulated materials. The peculiar arrangement of the tendinous sheaths should also be noted. The synovial sheath from the flexor of the little finger joins the general synovial sheath in the palm, which is separate from the sheaths of the other three fingers. The synovial sheath of the flexor of the thumb is continuous up into the forearm. The synovial membranes of the wrist are of great importance with regard to amputations. We have five separate membranes between the metacarpals and the bones of the forearm. One between the ulna and the triangular fibro-cartilage; another between the radius and cartilage above and the scaphoid, semilunar and cuneiform below; a third surrounding the os magnum and

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trapezoid and projecting up a short distance between the bases of the metacarpal bone; a fourth between the trapezium and the metacarpal bone of the thumb, and the fifth between the cuneiform and pisiform. The remembering of these anatomical facts is a necessity, more especially in emergency cases, where the surgeon may be called upon to perform an amputation or resection, the success of which will greatly depend on the accurate knowledge of the anatomy of the parts.

DR. L. C. LANE, of San Francisco: This paper is one of extreme value, as surgical treatment of the hand is very important. Dr. Barbat has told us that the palmar fascia is the continuation of the tendon of the palmaris longus. I would like to ask what it is when there is no palmaris longus, which very often is the case.

DR. BARBAT, of San Francisco: It is undoubtedly a fact that in some cases the palmaris longus is lacking, and in these cases the palmar fascia is but the continuation of the deep fascia of the forearm. When the muscle exists the fascia is undoubtedly the expansion of the palmaris longus tendon.

DR. W. WINTERBERG, of San Francisco: In connection with the cutting of tendons I will report a case which occurred not very long ago in my practice. A cook had the misfortune to cut the deep flexor of the index finger. The wound was at the articulation of the second and third phalanges. The attending surgeon sewed up the wound without paying any attention to the condition of the tendon. The wound healed, and the man lost the motion of the third phalanx, and the motion of the second phalanx was more or less impaired. The man was brought to me for treatment. I proposed to try to find the separated ends of the tendons in order to unite them. It was with considerable difficulty that I finally was able to find the proximal end of the tendon. The distal one was easily found, its end was apparently frayed out, a number of small fibers being apparent at the extremity. The proximal end was perfectly adherent in its groove; it was only with difficulty and with the aid of a sharp knife that I was able to dissect it out and free it from adhesion. Union was then effected by the use of a commissure of catgut. Everything went along smoothly, but motion did not return, as was expected, and this

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fact, in my opinion, was due to the adhesions reforming after union of the severed tendon had been effected. I have been unable to find any analogous cases in the literature upon the subject, and I should like to hear of any means to prevent such an accident as that and to make the operation more satisfactory.

DR. L. BAZET, of San Francisco: A French authority advises making extreme flexion, when the sheath of the tendon is seized immediately, and extreme extension is carried out; the tendon falls on the sheath and is caught and united.

DR. E. H. WOOLSEY, of Oakland: I have treated quite a number of cases of severed tendons of the hands and fingers, and have been universally successful. I have sometimes sutured the tendons with catgut, and sometimes with silk. Where I have used silk there has frequently been a little suppuration, but generally an immediate repair has terminated in a tendinous connection. I read a very interesting paper a few months ago, which spoke of uniting tendons that had been severed in the hand, by using a number of sutures of catgut, and making a kind of train for the deposit of tendinous repair, so that the connecting tissue outside would invade and get between the tendinous ends. Some successful cases were reported. I have not tried that method yet, although I have brought tendons very close together, where they were not quite approximated, and yet have had good repair, possibly by the building up of tissue between the ends of the tendons and by the conduct of such repair along the line of sutures.

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Pathology.

PERSONAL OBSERVATIONS IN THE REALM OF PATHOLOGY.

REPORT OF THE COMMITTEE ON PATHOLOGY AND PATHOLOGICAL ANATOMY.

By J. C. SPENCER, M. D., Chairman, San Francisco.

Mr. President and Fellow-Members: Whereas it would have been a comparatively simple matter for me to have skimmed through the literature, picking out pathological plums and serving them for your delectation in the form of a set paper, I have preferred to present for your consideration a few gleanings from my own limited field of observation. My only apology for their meagreness, and for the important gaps left unfilled, is a lack of time and facilities for completely working out the details of each case. In whatever they may be lacking, it is my preference to appear as an original investigator, rather than to win your approbation as a compiler of extracts.

Permit me to present for your consideration a series of cerebral lesions occurring in the Children's Hospital, each of which came to the autopsy table. For consistency's sake, the pathological findings will be presented first, and a few clinical data supplied with each for completeness.

CASE I. *Small Round-Cell Sarcoma.—Female, Aet. 42.*

Autopsy.—The calvareum was inordinately thickened. The entire convexity of the dura-mater was covered with congested and engorged blood vessels. The pacchionian bodies were very prominent. There were inflammatory adhesions over the same. There were also evidences of an old leptomeningitis. There was an unusual amount of serum at the base of the brain and distending the spinal canal. Over the apex of the Island of Reil,

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there was an area of yellowish-white pultaceous material. This broke down easily and admitted the finger into a cavity. Out of this cavity welled a cheesy pigmented pus, which lay between the surface of the cortex and a firmer dark-reddish mass, the size of an English walnut. This was slightly adherent to the sides and bottom of the cavity in which it lay, the sides of the latter being formed by the medullary portion of the cerebrum, the covering by the thinned cortical portion. More accurately located, this mass lay on the right side of the cerebrum at about the line of junction between the post-central and first occipital convolutions. The ependyma of the right lateral ventricle, and a part of the optic thalamus, were tinged the same intense yellow as the pus escaping from the cavity surrounding the tumor. Upon microscopical examination the tumor proved to be a small round-celled sarcoma, consisting almost wholly of cells, and containing almost no supporting frame work.

Clinical Data.—Six or eight months previous to admission, while washing over a tub, the patient felt a sudden severe pain in the back of the head, as though she had been struck. Loss of consciousness followed, lasting several hours. Upon returning consciousness she could neither articulate or swallow. The left side of the face, the left arm and leg were totally paralyzed. After a short time she was able to swallow, but speech was thick and indistinct. Paralysis lasted several days, then disappeared completely. The only symptom after this was constant severe headache. This would disappear momentarily only to return suddenly, as though a blow on the head had been struck. The pain was localized in the occipital and bi-temporal regions.

CASE II. *Cerebral Abscess.—Female, Aet. 30.*

Autopsy.—A somewhat irregular opening was present on the left side of the skull in the fronto-parietal region as a result of the trephining. Protruding through this was a soft pultaceous mass springing from and continuous with the brain substance. The dura-mater was firmly adherent all about the edges of the trephine opening. A dark reflex showed through the dura-mater over the base and posterior portion of the temporal lobe. The dura was free otherwise. There were no

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evidences of pachymeningitis. In the same frontal meridian and about 3 ctm. below the lower edge of the trephine opening, corresponding to the dark looking area above mentioned, was a space about 10 ctm. long by 6 ctm. wide, which constitutes an abscess cavity. The base and sides were apparently composed of pia-mater, the convexity of dura-mater. The contents consisted of cheesy pus, mingled with a small amount of blood. The inner surface of the dura, covering the middle fossa of the skull, was also covered with thick cheesy pus. The bone was not involved in any way. The dura was thickened and infiltrated with purulent and bloody exudation. There was much fresh lymph on either side of the parieto-occipital fissure and on the inner surface of the longitudinal fissure. The convolutions of the temporal lobe were completely flattened. The brain tissue itself was not involved. The brain tissue immediately beneath and around the trephine opening in a vertical direction toward the lateral ventricle, was gangrenous. The finger pushed into this tissue entered the lateral ventricle. Both ventricles contained an abnormal amount of serum.

Clinical History.—About seven years ago patient began to suffer from severe headaches, accompanied by vomiting. When the vomiting was especially severe, she would be momentarily blind. The attack occurred daily. Later blindness would occur when rising from a chair or stooping. During these attacks her mind would be a blank. A few months later, after reading a few words, blindness would come on. The blindness became complete and permanent four months previous to the operation. She had hallucinations of vision, as of a flock of sheep moving by. Previous to the blindness some weakness of the lower extremities developed. The headache was usually over the vertex and sometimes over the occiput. She had four attacks of tingling and numbness, beginning in the right thumb, then involving all the fingers, then extending up the forearm and arm to the shoulder. At times she would also have convulsive twitching of the fingers of the right hand. During the four months before operation, she had various attacks of paræthesia affecting always the right side, either in the upper or lower extremity. These were comparatively slight and made exact localization exceedingly difficult. At

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times there would be twitching of the right eyelid lasting several hours. The central lesion was located by Dr. Newmark over the motor area for the right side and for that governing the hand. The patient was trephined, but owing to syncope search for the supposed growth had to be discontinued. The pus contained large numbers of diplococci, morphologically similar in all respects to the diplococcus of Neisser. No cultures were made.

CASE III. *Acute General Miliary Tuberculosis.—Male, Aet. 4.*

Autopsy.—The external surface of the dura-mater and internal surface of the calvareum appeared normal. There was an abnormal amount of serum between the pia mater and the gyri. The pia-mater was studded with nodules about the size of a millet-seed. At the upper part of the Rolandic fissure the vessels were intensely congested and the pia-mater studded with miliary nodules. Over the junction of the frontal and parietal lobes on the right hemisphere, is a dense yellowish cheesy mass about 3 ctm. long and 1 ctm. wide. There was an abnormal amount of fluid in the lateral ventricles. The choroid plexus on either side contained many small tubercles. There were no abnormalities apparent in the large ganglia. The right lobe of the cerebellum contained a yellowish cheesy mass, about the size and shape of a pecan nut.

Clinical History.—The ignorance and indifference of the parents defeated all attempts at procuring any accurate clinical data. About six months before admission patient began to cough and fail rapidly. There was no history of convulsive seizures at any period.

CASE IV. *Cerebral Syphilis.—Male, Aet. 4 years.*

Autopsy.—The hands are partly flexed on the carpus and fingers flexed over thumbs. The feet are in the extreme talipes equinus position, with some element of varus. All the sutures of the calvareum and the fontanelles are open. The dura-mater is adherent to all the sutures. The calvareum is very thin and translucent. The gyri are much flattened. There is moderate congestion of the vessels. The entire brain gives a sense of fluctuation. There is an excessive amount of serum between the pia and dura-mater. The third ventricle is so greatly distended with fluid as to form quite a prominent tumor at the base of the brain. Both lateral ventricles con-

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tain a large quantity of clear serum. The choroid plexus shows many large injected and tortuous vessels. In the right half of the cerebellum is a large cyst filled with a dark fluid, brownish yellow in color and partly gelatinous. The cyst-walls are boggy and infiltrated. There are macroscopic evidences of chronic endarteritis in the vessels at the base of the brain.

Clinical History.—Child's mother gives a clear syphilitic history. The child's history dates back one year. It began with nervousness. He soon became too helpless to feed himself although he had a voracious appetite. Later he lost control of his legs and could not sit erect. In four months he became totally blind. His head has always been large, but has increased in size since his illness. He has always eaten well and been well nourished. When questioned he replied intelligently, though somewhat slowly and hesitatingly. There was constant moderate jactitation when either awake or asleep. There was some twitching of the hands. The head measures 58 ctm. in circumference at its largest diameter, and 27 ctm. from the occipital protuberance to the glabellum. Ophthalmoscopic examination reveals secondary atrophy of both optic nerves. On the day preceding death he had violent tremors of both hands and arms. He died without convulsions.

Another subject of paramount importance and interest has recently occupied my attention. I refer to the treatment of inoperable malignant growths with the toxines of erysipelas and prodigiosus, injected according to the method of Dr. W. B. Coley of New York. Through the courtesy of Dr. Krotoszyner, I have since February had the opportunity of treating two cases which I shall detail briefly.

The first was one of scirrhus carcinoma of the left mamma in a woman, aet. 48. Within a period of seven months from the date of the first operation there had been three recurrences, first in the axilla, then at the site of the original cicatrix, then in the supra-clavicular fossa. The operation for a growth in the supra-clavicular fossa revealed the presence of a growth about the size of a mandarin orange, behind the sterno-clavicular articulation and communicating with other smaller growths in the anterior mediastinum. Injections of the combined toxines were used, beginning with six minims. There

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was no reaction perceptible. The dose was increased daily until on the sixth day she received forty minims, when a moderate reaction followed. Toxines from the same portion used on another patient in ten minim doses produced a very sharp reaction. Strange to say, thirty-five minims injected on the following day produced a tremendous reaction, coming on in 15 minutes. It consisted of severe chills, great cardiac and thoracic oppression and prostration with intense dyspnœa. Once after this there was a similar general reaction. It should be remarked that the entire site of the original operation and extending upward toward the clavicle and outward toward the axilla was densely infiltrated with hard masses of recurrent growth. The injections were made in part into these and in part into the periphery. There was at times appearances indicative of a marked local reaction leading us to expect abscess-formation, but this subsided. On two occasions previously the patient developed acute mania *post operationem*. About ten days ante-mortem the patient began to show hallucinations. Her condition became progressively worse, and she died with symptoms of acute cerebral œdema.

The foregoing clinical data are presented to adorn the tale of our post-mortem findings. The brain presented the usual evidences of acute cerebral œdema. The skin, cicatricial tissues and cancerous masses were densely adherent to the anterior thoracic wall, and there were abundant metastases in the anterior thoracic pleura. The infra and supra-clavicular spaces were filled with cancerous masses extending into the axilla. The mass which K. had palpated at the time of the last operation was found to have diminished in size by at least one-half. There were numerous metastatic deposits in the anterior mediastinum and in the left lung. We also found a concealed umbilical omental hernia.

The second case which is still under observation is that of a shoemaker, who presents a characteristic epithelioma occupying a large portion of the floor of the mouth, though principally on the right side. I may say that the diagnosis was verified microscopically in each case. This patient is receiving about ten minims every second or third day, injected sometimes into the growth and sometimes into the periphery. He has a sharp reaction each time. Soon after starting this treat-

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ment, the tumor increased somewhat in size, but latterly has decidedly decreased, so that we are led to hope for a favorable result.

DISCUSSION.

DR. C. G. KUHLMAN, of San Francisco: The author has not told us what kind of antitoxines he used in injecting the tumor, nor has he told us what relation exists between tumors and antitoxines, hence I cannot consider his method a rational one or a scientific one. A therapeutic method, in order to be scientific and rational, must be in direct relation to the cause of the disease, and I, for one, am ready to denounce any therapeutic method which does not bear a relation to the cause as unscientific and unwarranted. The literature of the world to-day upon the subject of antitoxines is such that no man is warranted in injecting a human being with toxine; because it has been shown beyond a doubt that toxine poisons the organism and complicates the disease by setting up inflammatory conditions which injure important functions, such as those of the heart, liver, kindeys and spleen. One injection of antitoxine has produced albuminuria and death in children, and I certainly think that the death of the author's first patient was due to the injection of toxine, and that the other one will probably die from the same cause if he keeps on injecting toxine. There is one prominent symptom the author has enumerated in connection with this matter, that of heart failure, which is one of the most first and prominent symptoms of collapse in the treatment of toxine. The toxines directly affect the heart and the centers in the brain. Injections of toxine produce a chemical decomposition of the blood of human beings. In all conditions where toxines have been injected into human beings we have had skin symptoms and nephritic conditions which ought to be sufficient to deter us from such practice as we cannot explain in a rational manner. There is absolutely no excuse for any one to use that treatment at this late day, because all scientific data and the expressions of scientific men in the leading centers of the world, the old world and this world, are such as to banish forever such therapeutic methods from our practice.

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DR. T. F. RUMBOLD, of San Francisco: I have had four months' experience with toxines. Of course the result was death. But I am satisfied that when a human being finds that eight operations are not likely to cure a case, he will grab at any kind of a straw that seems to give benefit, and will continue the use of that remedy as long as life lasts. The use of toxines in the case I speak of—a sarcomatous breast - commenced on the 7th day of August. There had been eight operations during the two and a half years previous. Dr. Martin made the first injection. We used two minims, and the result was in half an hour quite a chill with a rise of temperature to 102° in an hour and a half from the injection. In 24 hours from that time it was evident that the growth, which had before been rapidly increasing, was reduced. On the second day, two more minims were injected. Every time the injection was made, in the highest portion of the tumor, it was followed by a chill in half an hour, and the temperature went up, but not quite as high as the time before. In 24 hours reduction was manifested. Those injections were continued every other day; the first two days two minims, the next two days three minims, and the next two days four minims, and kept increasing that way. Dr. Martin stated that the growth had very materially decreased, and by the middle of September there was hardly anything there at all. The tumor softened and liquefied. The disease then began to show itself in the axilla of the right arm. The injection was made there, and we kept on increasing the dose up to five minims twice a week. The growth kept increasing, and the patient died in the end of November. The post-mortem examination proved that there were metastases in the lungs, liver, kidney and excretory glands. There is no question that the toxines had a manifest beneficial effect. From the first injection received by the patient not one particle of pain was felt from the breast. Previous to that time hypodermic injections of morphine had been necessary for about three months.

DR. SPENCER, of San Francisco, in replying, said: I was rather surprised to meet with such violent and unconditional opposition on the part of Dr. Kuhlman. He has appointed himself as objector-general on most subjects, and, of course, it was hardly to be expected that the subject upon which I have

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spoken would escape his general objection. He has made some sweeping generalizations and some very incorrect statements. I do not know from what source he has derived his information, but if he keeps himself in touch with the experience of the last few months in the use of some of these so-called toxines or antitoxines, he cannot have failed to have seen that the results are not what he has stated them to be. I will not attempt to remember the exact number of cases examined by Riscoe in the Pathological Institute of Vienna, which have been injected with antitoxine, and in none of them was nephritis developed. His statement that the patient who died, died from the use of toxines, is simply his own impression. It is surprising that one of our colleagues would get up in a meeting of the State Medical Society, and with a wave of the hand sweep away a remedy which has been acknowledged—at least not the toxines that I have referred to, but the antitoxines which have been prepared by Behring—to have reduced the mortality in that line 40 per cent.

DR. KUHLMAN, of San Francisco: It has increased the mortality in the city of Berlin from diphtheria 30 per cent.

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THE STATUS PRESENS OF ANTITOXIC-BLOOD-SERUM.

SUPPLEMENTARY REPORT OF COMMITTEE ON PATHOLOGY AND PATHOLOGICAL ANATOMY.

By CHAS G. KUHLMAN, M. D., San Francisco.

When I look backward and dwell upon the immense time and labor expended in acquiring a proper understanding of this subject, which has wrought chaos within the arena of medicine, from time to time during the past 200 years or more, I feel imbued with a thorough appreciation of the time-honored saying : There is no royal road to knowledge, for if I had not been able to trace the subject through the original literature of several languages, my knowledge thereof would be very crude indeed, and when I sum up the result of my investigations thereon I am more strongly than ever imbued with a proper appreciation of another time-honored saying, namely: There is nothing new under the sun. However I do not regret having expended so much time and labor within this field; the opinion of some of my medical friends that it is labor in vain, to the contrary notwithstanding.

Antitoxic-blood-serum is the outgrowth of experimental pathology pursued so vigorously during this century with the aid of the improved microscope. It is especially the outgrowth of that line of inquiry which seeks to explain the *modus operandi* by which an organism is rendered immune for a longer or shorter period of time, after having passed through certain infectious diseases such as syphilis, small-pox, etc.

That daily injections of toxic or poisonous substances in gradually increased amounts will establish tolerance and immunity against toxic or poisonous amounts of such substances has been known for many centuries, and has been taken advantage of by prominent men from time to time who feared death by poisoning at the hands of their enemies.

For reasons too obvious to mention we are not in a position

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to judge exactly of the opinions held by the ancients on this subject, but if we judge from ancient pharmacopœias and medical writings it does seem as if medical history is repeating itself, as the tissues and fluids of man and animals suffering and dying from certain diseases were employed to prevent and cure these maladies in the living sick. For many centuries prior to 1799, when Jenner introduced inoculation or vaccination with the serous contents of the vesicles occurring in so-called cow-pox, it was employed in human therapeutics as a preventive and cure in said disease. (J. O. Affleck, M. D., Encycl. Brit., Ninth Edition, Vol. XXII, and S. S. Herrick, M. D., Encycl. Brit., Supplement to Ninth Edition, Vol. IV.) A therapeutic method as it were aiming at immunity and cure by inoculation of antoxic-blood-serum contained within said vesicles.

The French syphilologist Diday was the first, however, to call the attention of the medical profession to the immunizing and curative properties of blood taken from an organism having passed through an infectious disease. On the 10th day of September, 1849, he reported to the Paris Academy of Medicine that he had prevented constitutional symptoms in 15 out of 16 male patients suffering from primary chancre and retarded constitutional symptoms in one case for a period of six months by injecting them with blood taken from the skin covering tertiary periostitis. A committee was appointed to investigate the matter, but never made a report.

Sperino wrote an excellent work on syphilis in 1853, in which he refers to antitoxic properties on the part of the blood in infectious diseases.

Raynaud approached the subject more directly on the 8th day of February, 1877, when he injected 250 grams of blood into the jugular vein of a calf—taken from a calf that had been vaccinated six days previously, and in whom the vaccinal eruption stood in full bloom. The calf showed no abnormal symptoms, and when vaccinated two weeks later, on the udder, with sixty points it proved immune over for the virus. From this Raynaud concluded that the blood of the calf must have contained a vaccinal virus, or, at least, a principle capable of transmitting immunity. (*D'un principe capable de transmettre l'immunite.*)

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Raynaud has also experimented on children. He injected 35 children each with a drop of blood taken from other vaccinated children, but without obtaining eruption or immunity. He adds, however, that the amount of blood may have been insufficient to give positive results.

Hericourt and Richet (Paris Academy of Science, Oct. 20 and Nov. 5, 1888) claimed that they had succeeded in rendering rabbits immune against septicæmia caused by the staphylococcus septicus by injecting them intra-peritoneal about 24 hours before infection with from 30 to 50 grains of serum taken from dogs that had passed through the disease—and that the serum from other dogs did not possess this property. They also thought that similar effects might be obtained in other infectious diseases, such as anthrax and tuberculosis, with dog serum.

Pasteur claimed to have rendered animals immune against anthrax, and taking up the question of immunity, he advanced the theory that immunity depended upon the microbes rendering the organisms unfit for their peculiar physiological activities, by exhausting it of their proper nutrient media—the so-called exhaustion theory.

Chavan opposed Pasteur's exhaustion theory, and advanced the view that certain substances were retained which possessed the properties of rendering the organism immune—the so-called retention hypothesis.

Metchnikoff, who had closely observed the behavior of mesoblastic cells over for contagiums artificially introduced into the tissues of small crabs—the so-called Daphnia—introduced the subject of phagacytosis in 1883, digestion of contagiums by the leucocytes and fixed tissue cells, as it were.

The teachings of Metchnikoff met violent opposition from Koch and his disciples in Germany, who regarded immunity as the result of chemical processes, and it did not take long before Fodor and Wyssokowicz—the former in 1885 and the latter in 1886—published the results of a series of experiments showing that the blood possessed the power to destroy the bacteria within and without the organism in less than an hour.

Emmerichs made a series of experiments with the micrococcus erysipelatosus in anthrax during 1886 and 1888, in which

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he claimed that the bacteria was destroyed in 25 minutes. These experiments form the basis of Emmerich's priority war with Behring in regard to antitoxic-blood-serum.

Buchner was the first to set forth that this bacteria destroying power on the part of the blood resided especially in the serum.

Some contagiums possess special characteristics, such as in tetanus and diphtheria, where the contagium remains localized, and death is the result of systemic invasions of toxic substances generated in loco. Poisoning rather than infection, as it were, and it is claimed that to render immune against the purely infectious diseases is easy compared with the toxic.

In connection with the investigation of toxines conducted by Roux, Kitasato, Villard and Vincent, the question arose: if it was not easier to destroy the toxines in the blood in tetanus and diphtheria, then to destroy the contagium in loco. Behring and Kitasato conducted a series of experiments to determine the foregoing question, and as a result claimed the following:

(1) That they had succeeded in saving rabbits from tetanus and diphtheria poisoning by injecting them with a mixture of the contagium and trichloride of iodine. (2) That rabbits could be rendered immune against tetanus and diphtheria by injection of gradually increased doses of trichloride of iodine. (3) That the blood from animals rendered immune with trichloride of iodine, when injected in sufficient quantities into the peritoneal cavity of other animals, is capable of rendering them immune. (4) That the property of rendering immune resided especially in the serum of the blood. (5) That blood and serum is capable of rendering immune outside of the body. (6) That blood and serum possess therapeutic properties after infection of animals. (7) That infection of animals by injections of pure diphtheria cultures of sufficient virulence, produces certain symptoms, such as, œdema at the point of injection, hemorrhagic inflammation of the supra-renal capsules, and more or less exudate in the pleural cavities, and that inoculations of this exudate—free from bacilli—will kill animals with the same symptoms as if they had been inoculated with pure cultures of bacilli, especially if the exudate is hemorrhagic in character; and that animals surviving inoculation

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are immune against infection and intoxication, and that blood from such surviving animals, when mixed with old toxic diphtheria cultures, is capable of destroying their virulence.

About five years have elapsed since Behring put forth his claims, and during that time numerous experiments have been made in various laboratories, not only with tetanus and diphtheria, but also with other infectious diseases. Olgata claimed for anthrax-serum what Behring claimed for diphtheria serum, but Serafini and Erriquez have denied this after careful experiments on 121 different animals. In 1892 Tizzoni, Centanni, Hericourt, Ricket, Babes, Bernheim, Bertin and Picq made similar claims for tuberculin, but none of their experiments can be said to have justified their claims.

Similar unsupported claims have been put forth by the following named investigators for the following diseases: Tizzoni, Centanni and Babes for hydrophobia-serum; Stern and Sanarelli for typhoid-serum; Issaif and Klemperer for pneumonia-serum; Pfeiffer, Pawlowsky and Buchstab for cholera-serum; Metchnikoff for hog cholera-serum; Lowenberg for ozone-serum; Hitt for chicken cholera-serum; Semmer for cattle plague-serum; Hell for infectious horse pneumonia-serum; Bruschettini for influenza-serum; Charrin for pyæmia-serum; Bonaduce for syphilis-serum; Janson and Gundoline for vaccine-serum. Preventive and curative claims have also been made for ricinis, jequirity and snake poison serums.

The following is the *modus operandi* by which serum is supposed to acquire antitoxic properties in tetanus and diphtheria: Guinea-pigs, rabbits, sheep, goats, cattle or horses receive a sub-cutaneous injection of a small amount of toxic culture from bacilli, to which has been added a certain amount of trichloride of iodine, or what is better still, a solution of hyperiodide of potassium.

In diphtheria horses may be injected with fresh virulent bacteria cultures. As soon as œdema has disappeared at the point of injection the animal is ready for a new injection. The solution of iodide should be gradually diminished with each injection. After a while pure toxine can be injected, and the animal acquire by gradually increased doses perfect immunity against toxœmia. Serum drawn from the blood of such animals between five or eight weeks, possesses the property, when

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mixed with toxine, of preventing toxœmia in unimmune animals.

This property on the part of serum thus subjected to toxination, has been named "antitoxic," and is claimed to be manifest either before or after or at the time of infection with toxine or bacteria, and that it manifests its antitoxic properties both preventive and curative at the point of injection and systemic, and that it can be increased to a high degree by continuous injections of immune animals for a long time, and that it is specific in so far as tetanus-serum does not render immune against diphtheria and vice versa.

Behring's claim that antitoxic-blood-serum is specific, and has no virtues over for other diseases, is disputed by Calmettes, who claims that hydrophobia-serum (which so far has only proved preventive over for its own virus, as the contagium of the disease is unknown as yet) manifests antitoxic properties over for snake poison. Other exceptions have been made and will be alluded to in the course of the paper.

Ehrlich claims to have rendered animals immune against "ricin and abrin," two strong poisons contained within castor and jequirity beans respectively, by feeding them on aqueous extracts thereof, and that serum from animals thus rendered immune possesses the same antitoxic properties as tetanus and diphtheria-serum, either when mixed with the poisons outside of the organism or when injected before or after or at the time of inoculation with the poison. The relation is also the same, in so far as their specific action is concerned, as ricin-serum is active only over for the ricin poison, and the abrin-serum over for the abrin poison only.

Calmelle has experimented with poison from several species of Indian, Australian, Chinese and French snakes, and claims that we can render immune against snake poison in one of the following ways: (1) By injection of gradually increased doses of the poison. (2) By mixing the poison with different kinds of alkaline chlorites or chloride of gold. (3) By heating the poison to 80°C. before injecting; and that serum from animals thus rendered immune possesses the same neutralizing properties as ricin, abrin, tetanus and diphtheria serum, and that the snake poison serum from one species of snakes possesses

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antitoxic properties for every other snake poison thus far examined.

Tetanus and diphtheria serum is also said to have antitoxic properties over for snake poison, but the reverse does not hold good, nor does snake poison manifest antitoxic properties over for hydrophobia, although hydrophobia-serum is antivenomous. Snake poison serum is also said to protect against ricin and abrin poisoning.

Ehrlich and others claim that other fluids of the organism possess antitoxic properties, such as the aqueous humor, the sputum, the urine, the milk, and also the contents of such glands as the lymphatic, the salivary, the lachrymal, the thymus, the liver, the pancreas, the spleen, the supra-renal-capsules—but in less degree than the serum. The muscles are exempt, and in some cases the spleen and supra-renal capsules.

Botkin and Villard claim that leucocytes found in abscesses occurring accidentally in tetanus immune animals possess antitoxic properties.

According to Ehrlich, milk can be strongly antitoxic, and he claims that immunity may be inherited that way. However, the consensus of opinion is in favor of the serum as the selective fluid, and according to Tizzoni and Centanni—that from rabbits is superior to all others.

The nature and chemical composition of so-called antitoxine is unknown. We do not even know if it is an albuminous body. However, the following has been brought out concerning the serum by the following investigations: That it will not stand daylight very long, but will keep for weeks when mixed with one per cent of carbolic acid. That it decomposes when heated to 65°C. for 30 minutes,—according to Frankel and Soberheim 70°C., and according to Behring, diphtheria serum will stand a temperature of 80°C. without undergoing decomposition. Calmetto claims that it contains a specific principle, inasmuch as antitoxic serum mixed with toxine loses its antitoxic properties when heated to 70°C., while it retains the toxic. Strong acids, such as H. Cl. 16 per cent and lactic 40 per cent, destroy it; but weak lactic acid 16 per cent and weak alkalies do not affect it. The serum can be diluted to any extent without losing its antitoxic properties, nor does it lose its antitoxic properties by partial decomposition.

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Alcohol and various salts precipitate a substance from the serum which possesses antitoxic properties, and which will stand desiccation and pulverization, and does not pass through animal membranes by dialysis.

Tizzoni and Centanni claim that the active principle in serum is not a ferment, as animals injected with antitoxic serum mixed with a watery extract of blood leeches (known to split up ferments) remain immune over for injections of toxine.

How so-called antitoxine is formed in the serum and upon what its preventive and curative properties depend, is as yet unknown. Buchner believes that it is due to a simple transformation of the toxine, but this does not harmonize with the experiments of Calmette and Behring, according to which serum can be rendered antitoxic by injecting animals with solutions of bichloride of iodine and hypo-iodide of potassium—chemically, as it were.

Antitoxic therapy is the direct outcome of violent opposition to Metchnikoff's phagocytosis teachings, by Koch and his disciples—chemical versus physiological processes or humoro-pathological versus Virchow's cellulo-pathological processes.

Behring's belief that the action of antitoxine is purely a chemical one is based upon the following: (1) Antitoxine is contained within the serum—a cell-less fluid. (2) Antitoxic serum is effective immediately upon infection in admixture with toxines. (3) Apparently the antitoxic strength of the serum depends upon the amount of toxine injected into animals. (4) The serum gradually loses its properties if injection of toxine is discontinued.

The following claims, said to be based upon numerous experiments, have been advanced in opposition to those of Behring.

(1) That the antitoxic strength of serum does neither depend upon the amount of the dose nor upon the total amount of toxine injected, as small gradually increased doses give the strongest serum.

(2) An immune animal may lose an amount of blood equal to its entire volume, and still the reformed blood will possess antitoxic properties.

(3) Doses that prove harmless in small white mice prove fatal in rabbits. This would not happen if the effect of the

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serum depended upon chemical affinities between toxine and antitoxine; and doses that prove harmless in unmanipulated guinea-pigs readily kill others that have passed through exhaustive infectious diseases such as cholera and pneumonia, and also when harmless microörganisms, such as the micrococcus prodigiosus, bacterium coli communis and spirilla, are introduced into the organism to engage the leucocytes, giving the toxines undisputed sway.

(4) Animals are more susceptible to the influence of toxine after giving birth to young. This ought not to be the case if it is simply a chemical reaction.

(5) There exists no relation between immunity and antitoxidity—which would be the case if the process is purely a chemical one. In other words, the power of an organism to resist living virus does not always determine its resisting power over for toxine infection; and while a higher degree of toxine-immunity denotes a high degree of bacteria immunity, still the reverse is not always the case, as some animals whose serum is but little antitoxic can resist considerable bacteria infection, because the leucocytes are capable of destroying the bacteria, and a slight augmentation in the dose of toxine proves fatal to immune animals; and the serum of animals naturally immune is not antitoxic, and remains toxic for three or four days after inoculation with toxine, after which it becomes strongly antitoxic; and blood from horses highly immune loses its antitoxic properties for a time when inoculated with large doses of toxine without manifesting any symptoms of infection when infected with living virus—periods of immunity as it were when the blood is toxic.

(6) Rapid cure, or at least amelioration of the symptoms, ought to take place in curable cases if the process is a chemical one, but this never occurs; it always takes a certain time before cure commences, and in incurable cases no amelioration of the symptoms can be noticed, no matter how large the dose of antitoxic serum.

(7) Transmission of immunity from animal to animal by inoculation with small doses of serum would not be possible if it was simply a chemical process because attenuation would finally render the serum ineffective. While it cannot be said that we have even approached the solution of this problem,

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still there are a great many things that point toward the rationality of Metchnikoff's teachings: that certain cells are the defenders of the organism; that the process is a vital and not a chemical one—phagocytosis, as it were.

The points in favor of Metchnikoff's theory may be enumerated as follows:

(1) Chatenay has found pronounced leucocytosis after inoculation with tetanus and diphtheria toxine.

(2) Gabritschewsky has found that diphtheritic virus produces necrosis of the histological elements in animals that have not undergone serum treatment, and that the leucocytes are not only capable of completely enveloping microörganisms, but also of completely digesting them. According to this, antitoxine serum protects the leucocytes against the necrotic effects of toxine and enables them to remove the dead tissues mechanically, as seems to be the case in connection with diphtheritic membranes.

(3) Kobert and his disciples have shown, by purely pharmaceutical experiments, that the leucocytes are capable of taking up, and retaining within their substance or organism for a long time, soluble salts such as: "Ferr.-oxyd., sach. solub.," and that such leucocytes become localized in the liver, spleen and marrow of the bones.

(4) Tizzoni and Centanni have found that animals having been subjected to extirpation of the spleen could not be rendered immune.

(5) Righi found that immunity disappeared after splenectomy.

The following experiments also point toward an inter-cellular process: (1) Animals possessing a very strong antitoxic serum are often very sensitive over for small doses of toxine. (2) A mixture of serum and toxine that will not affect a guinea-pig will produce swelling and fever in the immune horse from which the serum was procured. (3) Serum from animals not rendered immune possesses antitoxic properties when taken from them while under the influence of a fatal dose of snake poison.

Buchner and Hankin have advanced a new theory which stands between Koch's humoral and Metchnikoff's cellular theories, and appertains to so-called alexines (Greek—I ward

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off) substances of an albuminoid nature, constant in natural immune animals, and prepared by the organism in others when needed. There exists no experimental evidence to support this theory, and inasmuch as Buchner has lately expressed the belief that the alexines were elaborated by the leucocytes, and Hankin that they are elaborated by the eosinofile cells, they have both gone over to the cellular theory.

Metchnikoff has proposed the name of stimulin for the principle in the serum on the ground that it does not neutralize the toxine but stimulates the leucocytes to destroy it.

Immunity or stimulation of the cells of the organism by antitoxic serum is of short duration compared with what may be termed original immunity produced by inoculation of gradually increased doses of toxine.

While the foregoing is, to a great extent, hypothetical, and while the entire subject may be said to be as yet in *sub judice*, still the effort thus made to solve one of nature's most perplexing problems has not been entirely in vain, as it has shed some light upon a process long recognized but not understood, namely, the *vis medicatrix naturæ*. The *modus operandi* employed to render serum antitoxic within the organism has already been referred to in this paper, and inasmuch as all calculation concerning the antitoxine per cent of any serum must, of necessity, be entirely speculative, we will refrain from entering any further into a consideration of that part of the subject.

Antitoxic serum, and especially antitoxic diphtheria serum, has found its way into human therapeutics, and inasmuch as it has been thoroughly tested during the past five years, we are in a position to pass judgment upon its merits as a therapeutic agent, and for reasons too obvious to mention we will use it as our standard without in any way infringing upon special merits in any, as the same specific claims have been made for all alike.

The scientific value of therapeutic methods depends upon two things: (1) The relation of the agent or methods to the specific cause of the disease. (2) Verification, statistically and otherwise, of the specific claims made for the agent or method by its introducer, such as immunity, cure, harmlessness, etc. Having thus determined upon what the scientific

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value of antitoxic serum must depend, we will proceed to judge antitoxic diphtheria serum accordingly.

The latest theory appertaining to the specific cause of diphtheria is that hesitatingly advanced by one Löffler in Germany in 1884, that diphtheria is caused by a microörganism belonging to the class schizomycetes or cleft-fungi, but numerous observations and experiments by reliable investigators during the last ten years deny this theory. These observations and experiments may be enumerated as follows:

(1) It is impossible to distinguish the so-called bacillus diphthericus from numerous other microörganisms found in connection with diphtheritic membranes.

(2) Bacilli answering Löffler's description have never been found alone in connection with diphtheritic membranes. (Hansemann, Ritter, Körte, Frankel, Virchow.)

(3) Bacilli answering Löffler's description have been found in only about 50 per cent of cases of clinical diphtheria. (Hansemann, Ritter, Benda, Scheinemann. Report of New York Board of Health in 5,611 cases Diphtheria, May 4, 1894.)

(4) The disease produced in animals differs radically from Bretonnau's picture of typical diphtheria in human beings. (Hansemann, Ritter.)

(5) Ritter has found the bacillus absent in cats suffering from typical Bretonnau diphtheria.

(6) Acquired diphtheria in animals so susceptible to diphtheritic infection, such as guinea-pigs, has never been observed no matter how long or how close they have been brought in contact with diphtheritic patients. (Ritter, Hansemann, Meyer, Frankel, Virchow.)

(7) Löffler's virulent bacillus has been found in numbers in the mouth and throat of healthy children and nurses in diphtheria wards; also in numerous cases of rhinitis fibrinosa, running the same clinical course as other cases in which this bacillus was absent. (Hansemann, E. Meyer, Frankel, Scheinemann, Leibreich.)

(8) As bacteriologists regard those cases as true diphtheria only, in which Löffler's bacillus is found, a large number of cases of clinical diphtheria must be excluded from this diagnosis, and we are forced to distinguish between diphtheria-sick and diphtheria-well as in cholera.

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From these observations and experiments we may reasonably conclude that Löffler's bacillus, so-called, is not the true cause of typical Bretonnau diphtheria.

We will now turn our attention to Behring's specific claims for antitoxic-diphtheria-serum, which may be summed up as follows: (1) It renders immune against diphtheria. (2) It cures diphtheria, and the cure is due to rapid immunity. (3) It is perfectly harmless.

For reasons too obvious to mention the serum has been more thoroughly tested in the city of Berlin, the home of its promotor, than elsewhere, and although we will not exclude any data appertaining to its application, still the expressions of leading Berlin physicians who have tested it in thousands of cases during the past five years—the entire period of its employment,—together with reliable mortality statistics, will constitute the most important data upon which our final conclusions are based in as far as Behring's specific claims for the serum are concerned.

We will take up the various claims *seriatim* so as to avoid confusion.

(1) Immunity. Hansemann, Ritter, Körte, Lubinsky, Benda and others have seen recurrent diphtheria in numerous cases treated by the serum method, a few days after being pronounced cured.

(2) Cure. Ritter, Körte, Benda, Lubinsky, Hansemann and others have seen death in numerous uncomplicated cases of diphtheria, treated in hospitals, from the very onset of the disease, with serum.

(3) Harmlessness of the serum. Mendel, Lubinsky, Scholz, Unger, Baginsky, Körte, Ritter, Hansemann, Roux, Oppenheim, Martin and others have observed abnormal heart sounds, and serious affections of the skin and kidneys after injections of the serum. Hansemann and Oppenheim have seen children die from complete anuria and albuminuria after one injection of the serum. Benda and Körte have seen fresh miliary tuberculosis after injections of serum.

Now for statistics.

E. Hahn, connected with Frederickshain Hospital, Berlin, where 4,575 cases of diphtheria had been treated from 1880 to 1895, of which 2,550, 56.6 per cent, got well—could see no

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material difference in the mortality since 1890, the serum period, and that prior to 1890 when patients were treated by other methods.

Rumpf, of Hamburg, states that Hospital statistics from that city compare favorably with those coming from cities where the serum is employed in diphtheria.

The mortality statistics of Berlin from January 1st, 1890, to November 24th, 1894, compiled by Gottstein, who, together with Schleich, has lately published a brochure on Immunity, Infection-theory and Diphtheria-serum, show as follows:

YEARS.	FROM SEPT. 30 TO NOV. 24.			PER CENT.	FOR ENTIRE YEAR.	
	DEATHS IN ENTIRE BERLIN.	DEATHS IN HOSPITALS.	ADMIT'D TO HOSPITALS.		DEATHS IN ENTIRE BERLIN.	DEATHS IN HOSPITALS.
1890	276	131	328	39.9	1,591	682
1891	216	124	320	38.7	1,106	613
1892	269	178	453	39.3	1,442	837
1893	334	197	454	43.3	1,627	956
1894	209	131	712	18.4	1,281*	737

*To Nov. 24.

For reasons too obvious to mention hospital mortality is very much less than that of private practice, hence we can readily understand why the mortality from Sept. 30 to Nov. 24, 1894, appears to be reduced to one-half of that of a corresponding period in 1891, because for some reason, perhaps "panic" attendant upon serum notoriety, 712 patients were admitted to the hospitals against 320 in 1891.

To what extent these 712 hospital cases have been manipulated by the friends of the serum will best be seen by referring to the last column of the above statistics, which shows that the mortality for entire Berlin during the year 1894, up to Nov. 24, far exceeds that of the entire year of 1891, and that in spite of the fact that over one thousand children received the serum treatment in the hospitals, besides numerous cases in private practice. When we add the number of deaths occurring between Nov. 24 and Dec. 31, the mortality of Berlin from diphtheria in 1894 exceeds that of 1891 by about six hundred, or over 25 per cent.

Virchow and Baginsky are in favor of the serum, but inasmuch as Virchow's opinion is entirely based upon certain results said to have been obtained by his assistants during a few

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weeks in 1894 while he was absent on his vacation, and inasmuch as Baginsky entirely ignores mortality statistics, their opinions regarding the therapeutic value of the serum can be of little importance.

Statements coming from Behring, Aronson, Roux and others personally interested in the manufacture and sale of the nostrums have been excluded from this paper.

As a rule European medical men are very conservative over for this new therapy, as they have not yet recovered from the humiliating effects of Koch's tuberculine swindle.

From the foregoing we are justified in arriving at the following conclusions.

(1) That therapeutic methods consisting in a direct introduction into the human organism of toxic substances and serum from organisms having passed through infectious diseases, having for their object prevention and cure of such diseases, have been employed for many centuries.

(2) That the etiology of infectious diseases is as yet in *sub judice*, and that therapeutic methods based upon the assumption that infectious diseases are caused by specific microörganisms are unscientific.

(3) That so-called antitoxic serums do neither prevent nor cure infectious diseases, but are dangerous compounds, giving rise to serious disturbances within important functionating organs, inviting fatal issue of cases which may otherwise recover.

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Histology.

A REVIEW OF THE CELL-DOCTRINE.

REPORT OF THE COMMITTEE ON HISTOLOGY AND MICROSCOPY.

By J. H. WYTHE, M. D., Chairman, Oakland.

The history of medical science proves that a rational conservatism has always been its prominent characteristic. It has drawn the line clearly between science, or knowledge of facts, and theory, or the attempt to explain facts by philosophy. In past generations its adherents may have been humoralists or solidists, vitalists or chemists, or in the present day may contend for blind physical evolution or teleological development, but to all theorizers the attitude of practical medicine is that of quiet expectancy rather than dogmatism.

At various times some particular phase of philosophy has been popular among medical men, as well as among others, but history shows that each phase has given place to another, and a voluminous literature has often been rendered useless by some really scientific discovery which has proved the fallacy of its fundamental principles. These changes have not disturbed at all the progress, nor changed the attitude, of practical medicine. Each positive addition to knowledge has been welcomed, and has been treasured, or made use of, for the good of humanity, although the speculations which clustered around it may have been cast aside as useless lumber.

A review of the cell-doctrine in physiology and pathology will illustrate this principle of scientific conservatism in medicine.

There seems to be a sort of charm to some minds in the philosophic idea that all the variety of things in nature must have their origin in a common elementary unit, although the truth of such an idea is assumed rather than proved. The attempts of alchemy to transmute all metals into gold, or to find the elixir of life, were legitimate deductions from this

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philosophy, which in our own day has been learnedly maintained in the efforts to trace the origin of all animal and vegetable life to a common slime, or protoplasm. As modern chemistry has dispelled the illusion of alchemy by proving the existence of some seventy distinct elements, with different atomic weights, so the advance of modern biology compels us, regretfully it may be, to part with protoplasm, since it has discovered organized materials which are still more elementary. Yet as the theory of protoplasm led us a step in advance towards the knowledge of vital processes, so the more recent microscopic investigations will prove constructive rather than destructive to real science.

Hippocrates taught that each organized body was superintended by a sort of principle, or nature, to which other principles, or powers, are subordinated for the performance of functions. This was also the theory of Aristotle, who gave the name of soul to the animating principle.

This theory was opposed from the 15th to the 17th century by Paracelsus and the chemical philosophers, who tried to explain all the phenomena of life by chemical laws. The chemical was succeeded by the mathematical school under Bellini, A. D. 1645, who taught that gravity and mechanical impulse were sufficient to explain all vital functions. Yet the theory of Hippocrates, with slight modifications, continued to be taught, even down to the present time, although the modern doctrine of the correlation of forces has revived the chemical and mathematical theories.

The early physiologists distinguished the various tissues as elements of organization, but with unaided vision it was impossible for them to proceed further with their analysis. The invention of the microscope stimulated a host of observers whose work was a model of patient industry. In 1667 Hooke pointed out the cellular structure of plants, and Haller, in 1766, resolved the solid parts of animals and vegetables into fibers and a sort of glue. This appears to have been the first effort to find an ultimate element of organization. Many attempts at analysis succeeded Haller, but it was reserved for Schleiden and Schwann, in 1838, to announce first the doctrine of the cell, which has played so important a part in modern science. Their views respecting the origin of cells were un-

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tenable, but this does not detract from the importance of their researches. They supposed that cells originate in a structureless jelly, or blastema, in which certain granules first appeared which were the neucleoli of cells. Around these other granules collected to form the neuclei, or cytoblasts, from which the cell itself arose as a transparent vesicle, like a watch crystal. This spontaneous generation was called exogenous cell-formation. Another method in which the cells were supposed to grow within cells was termed endogenous cell-formation. The observations of Barry, Henle and others modified these views, and showed that cells multiply by budding and self-division.

In 1835, Dujardin found that infusorial and other low organisms were formed of a gelatinous contractile substance which he called sarcode, and in 1861 Max Schutz showed that sarcode is similar to the contents of the primitive animal cell, and proposed to call it protoplasm. As this term became somewhat loosely used to refer to the material either alive or dead, Dr. Lionel Beale suggested the term bioplasm, to represent it when alive, and distinguished in it three states of matter—first, germinal matter, or *bioplasm*; second, matter which was living, or *formed material*; third, matter about to become living, or *pabulum*. Although Dr. Beal's views were influential, both in England and America, the majority of writers continued to use the term protoplasm indiscriminately.

As microscopic observations multiplied it was found that many cells occurred without either nucleus or cell-wall, so that the term cell came to represent merely a particle, or mass, of protoplasm. This latter substance was regarded as a sort of primitive slime, or organizable jelly. Prof. Huxley gave it great prominence by calling it the physical basis of life, and many popular treatises made it the starting point for brilliant theories of cosmogony.

Prof. Virchow, in 1858, published his celebrated work on Cellular Pathology, in which he clearly established the doctrine that every cell originates from a previously existing cell. This is true of all physiological and pathological processes, both animal and vegetable, and forms the basis of the greater part of modern medical science.

The great improvements in microscopic lenses, and the mul-

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titude of observers, within the past few years, have brought us to a position from which we can no longer regard the protoplasm of the cell as the primeval organizable material, since organized structure has been found in it, and in the genesis of the new cell this structure is changed and manipulated in a way which sets all our previous notions aside.

The researches of Flemming, Strasburger, Von Beneden and others have so greatly enlarged our ideas of the cell that its study has formed a new branch of biological science, called cytology. In this new science we seldom hear of protoplasm, and a host of new words has been coined to express what formerly was indicated by one. Thus we have spongioplasm and hyaloplasm, neuclein and paraneuclein, karyoplasm and neucleoplasm, achromatin and chromatin, etc.

The modern microscope has shown us that in what was called protoplasm is a very complicate structure, made up of a network of fibers more or less delicate, interwoven in such a way as often to puzzle the observer. The structure and chemical composition of these fibers are unknown. In the meshes of the network is a watery fluid of varying consistency, and among the fibers are large numbers of granules, just visible to the highest powers, which move to and fro with ceaseless activity. Although too small to show structure with our present microscopes, there are strong reasons for believing that they differ among themselves, and are composed of still minuter parts lying beyond our sphere of vision. The neucleus is a specially differentiated part of the cell. In it there seems to be a concentration of vital power, and there is a repetition of fibers, liquids and granules, still more complicate than in the body of the cell.

The indirect division of the cell, preceded by a complicated cycle of neuclear changes termed karyokinesis, is now recognized as the usual mode of reproduction, both physiological and pathological. First the neuclear fibers form a close skein, or spirem, then the skein becomes loose and is so looped as to leave a clear space, the polar field. This is followed by such changes as result successively in the neuclear spindle, the mother star, or aster, the equatorial plate, the daughter stars, or diasters, which indicate the commencement of cell division. From this account it is evident that we can no longer regard

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protoplasm as simply albumen, or any other homogeneous chemical substance. The cell is an elaborate piece of machinery, constructed so as to manufacture other pieces of machinery, either like itself or differentiated for various functions.

These modern discoveries of the microscope must set aside many hasty and crude conceptions, not only in metaphysics and philosophy, but in medical science also. The growth of histological structure is not so simple as it once appeared, and the modifications of such growth by the irritation produced by chemical or nutritive changes, whether bacterial in their origin or otherwise, will require years of observation by hundreds of microscopists before attaining certain knowledge. In the meantime, we cannot afford to neglect the priceless treasure of positive truth which has come to us from the past centuries. Medical science must prove all things and hold fast that which is good.

DISCUSSION.

DR. C. G. KUHLMAN, of San Francisco: I cannot agree with the author as to the history of the subject. Human histology is the outgrowth of biology, and a very late outgrowth of that subject. Prior to 1668, when Francis Ridi promulgated his remarkable doctrine, the doctrine of spontaneous generation was universally accepted by the scientific world. There is absolutely no history prior to that date. Francis Ridi's hypotheses were based upon certain researches into the ova of the blow-fly. In 1746 Boffeine and Needham showed that heated and sealed animal and vegetable infusions did not undergo putrefaction; that putrefactive changes depended upon the presence of germs. This led on to the study of microörganisms. The earliest bacteriologists were Heckel and Müller, who described several species of primitive microscopic forms in 1773. Ehrenberg, in 1830, was the first one to group microörganisms. He grouped seventeen species and described their physical and physiological characteristics. In 1838, Schroder filtered microbes through cotton wool. Pasteur has the credit of being the first one to lay down the doctrine of germ putrefaction, but the honor belongs to Louwenbrock, who demonstrated this in 1843. Pasteur did not demonstrate it until 1857 and 1862. He demonstrated in 1857 that fermentation

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was due to a special microörganism. Human histology took its origin, as it were, in 1858, when Virchow borrowed the hypothesis of Francis Ridi, or rather formulated an altered hypothesis, to the effect that there could be no life without antecedent life, or no cells without antecedent cells. Schlerden was the first one that promulgated the theory that all cells originated from preëxisting cells, and to him belongs the honor that Virchow is reaping to-day. The statements made by the author of the paper in regard to karyokinesis are true in some respects, but they do not explain the researches into vegetable cells, and into the so-called schizomycetes to human histology, because we have no original protoplasm in the human body. All the histological elements of the cells, as it were, are composed of two parts, differentiated and undifferentiated matter; the nucleus or forming, and the formed matter. The nucleus (or nucleii) is held to be undifferentiated matter, and the granular portion of the cell to be differentiated matter—matter that has undergone changes. Hence there is no such thing as a primitive histological element. So far we have not observed in nature a primitive histological unity—a primitive histological and physiological unity, as it were. All the cells that we know to-day consist of this differentiated and undifferentiated material, and hence we cannot apply the physical and physiological characteristics manifested by vegetable cells and fungi to animal cells, because they have undergone certain changes during evolution of the body. We must regard organic forms as of different chemical composition and evolution. We cannot say that any particular genera or species has originated from a common protoplasmic mass. Its species manifest different physical and physiological properties which separate them, and which demonstrate beyond a doubt that whatever their origin may have been, the origin was differential, and their evolution into functionating beings has also been on the lines of differentiation.

Dr. J. H. Wythe, of Oakland: My object in giving this paper to the State Society and to put it into print was to excite a little study in that direction, because I am sure we are on the eve of a revolution in medical philosophy, and it is wise for us to meet the case as science now puts it. That was my object, and that is all I need to say.

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HISTORICAL FACTS THAT SEEM TO INFLUENCE THE EXTENSION OF SOME DISEASES.

SUPPLEMENTARY REPORT OF COMMITTEE ON HISTOLOGY AND MICROSCOPY.

By THOS. F. RUMBOLD, M. D., San Francisco.

The Sudden Appearance of Asthma and Pulmonary Consumption.—For quite a number of years, since 1880, I have thought that histological facts suggest a more satisfactory explanation for the suddenness of the first attack of asthma, and the sudden involvement of the lungs in a pulmonary consumption, than any other explanation I have seen. The asthmatic patient, after taking a cold—not a more severe one than he has had many times before—which results in his usual siege of coughing, is surprised by symptoms of suffocation. A few minutes before this first attack his respiration was not in the least degree affected, now he suddenly feels impending death from want of breath. Another patient that has suffered from the same nasal trouble, has an attack of acute catarrhal disease of the lungs, known as pulmonary consumption, when but a short time previous, not more than a few weeks, a careful examination of his lungs proved them to be in a really good condition.

During the last six or seven years, while meditating on the subject, I have recalled a number of similar peculiarities, apparently quite as mysterious, in other diseases. I think that these peculiarities will be satisfactorily accounted for by the same facts which may clear up the mystery of the nose-lung troubles.

A Temporary Barrier to Some Diseases.—It seems as though there were a temporary barrier to the easy extension of some diseases from one portion of the body to another; in some instances, on the other hand, abnormal influences extend with unusual facility from one organ to another organ, although they are at some distance from each other, there being no bar-

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rier to the extension. In other words, in some instances, distance does not prevent extension, while in others, propinquity seems to afford but little opportunity for extension, both conditions being the very opposite of what one would naturally expect. Before the disease, in the latter case, can surmount the temporary barrier, it has, apparently, to accumulate strength so as to gain sufficient force to overcome the opposition—to overpower the barrier; and even after this accumulated strength, the disease would not overcome the barrier were it not frequently assisted in its forward movement by nervous and vascular connections as well as by continuity of structure.

Facts Gathered from Histology, it seems to me, will materially assist in clearing up this apparent mystery. I will ask to be excused for going into a little elementary detail, but the point I wish to elucidate will be made clearer thereby.

Before fecundation of the egg it is composed of a membrane and fluid contents. The latter are of a uniform appearance even under the most powerful microscope. After fecundation a change is noticed; what is called segmentation takes place; that is, the mass is divided into small particles and consists of globular cells and clear liquid. As the egg grows the globules approach the periphery, leaving the clear fluid in the center. These cells form a membrane by attachment at the junction of their margins. At the germinal spot is noticed a peculiar thickening. At this point two membranes are formed, the external membrane is called the ectoderm, or epiblast, and the internal membrane, the endoderm or hypoblast; between these two membranes is formed another one, which is called the mesoderm or mesoblast. From these three membrances, namely: the ectoderm, mesoderm and endoderm are formed all the tissues of the body.

The Dermal Origin of Various Portions of the Body.—From the *ectoderm* or *epiblast*, are formed the epithelium of the mouth and of the glands opening into it, except the tonsils; the epithelium of the nasal passages, of the adjacent upper part of pharynx, and of all the cavities and glands opening into the nasal passages, and other organs not necessary to mention in this paper. From the *mesoderm* or *mesoblast*, are formed the epithelium of the whole of the alimentary canal from the

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back of the mouth—including to tonsils—to the anus and that of all the glands which open into the alimentary tube; the epithelium of the eustachian tube and tympanum; and the epithelium of that portion of the respiratory system, from and including the larynx down to the air cells of the lungs, and other organs.

A Preparation Required.—In the history of every asthmatic patient there is seen to be a preparatory stage, the stage of nasal inflammation and consequent cough, and the resulting injury done thereby. Is there another disease that has a like preparatory stage? Yes, and as has been already intimated, that disease is pulmonary consumption. This disease is frequently known to appear suddenly—that is, in a few weeks—even in persons who have been in apparent good health, or, as it is usually expressed, "have been the picture of health," whose lungs, on careful examination a short time before, proved to be normal. I believe that the explanation of the sudden appearance of asthma is also the explanation of the sudden appearance of pulmonary consumption.

In the cases of asthma and pulmonary consumption, the fact that these diseases commenced in the mucous membrane of the nasal passages, a membrane of ectodermic origin, suggests, I think, the barrier to the rapid spread of the nasal inflammation, preventing it for some time from reaching the lungs, which are of endodermic origin. As soon as the nasal and pharyngo-nasal inflammation has attained sufficient age and severity, so as to produce a certain degree of injurious impression on the larynx, trachea, and bronchial tubes, the barrier is overcome, and this frequently takes place as suddenly as a peritonitis may supervene upon an enteritis, in a few hours or even moments as in the case of the asthma. I have an asthmatic patient under my care now, the wife of a physician, upon whom the slightest touch of a delicate probe on either side of the nasal septum, will set up instant marked asthmatic breathing.

It might be said by some that it is a coincidence only that these two diseases frequently make their appearances suddenly, each after a preparatory stage. But it is a matter of fact that there are other diseases that almost as suddenly exhibit evidences of extension beyond their usual limits.

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Pneumonitis and Pleuritis, and Enteritis and Peritonitis.—Clinical facts plainly demonstrate that a pneumonitis, severe enough to take life, very frequently occurs without a pleuritis; and that an enteritis, severe enough to take life, very frequently occurs without a peritonitis, and *vice versa* in both diseases. There is no accounting for these tissues, which are in juxtaposition, having so little influence upon each other, as respects diseased condition, unless the facts of their embryonic origin are taken into consideration, and this, in my opinion, is the solution of the mystery. The fact that the lungs are formed from the endodermic is, in my opinion, a barrier which prevents, for the time being, the disease from affecting the pleura, this membrane being formed from the mesoderm, and the fact that the bowels are formed from the endoderm is a barrier that prevents the peritoneum from becoming inflamed, the peritoneum being formed from the mesoderm. These all cannot be merely coincidences. The fact that at least six diseases have the same peculiarity, plainly points out that they are not coincidences, but that they are governed by a law, the same law.

It is seen that a tissue of one dermic origin forms a barrier to the spread of disease to a tissue of another dermic origin, although the two tissues are—as in the case of the pleura and lungs, and the peritoneum and bowels—placed back to back. There are other evidences of dermal influence shown in the extension and non-extension of pathological conditions; but reference to them, while not being out of place, would make this paper too long. The point I wish to make is that the original embryonal tissue formation has greater influence in directing the course of disease and in preventing its spread to certain regions than is generally conceded.

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Botany.

REPORT OF THE COMMITTEE ON INDIGENOUS BOTANY, MATERIA MEDICA, PHARMACY, ETC.

By W. P. GIBBONS, M. D., Chairman, Alameda.

We shall now make a few extended remarks on some of the plants alluded to in last year's report of this committee. Among these is the *Datura*, known as the thorn apple, Jamestown weed, Jimson weed, of which there are five species, at least, diffused over the western side of the continent. The seeds were introduced into South America from Constantinople by Gerard, and widely dispersed over the continent where the plant became naturalized and spread itself over the Pacific slope. The name datura is an alteration of an Arabic word, *tâtôra*, Forskahl. About Gora and Canara it is called *Daturo*, Rumphius. Stramonium is an abbreviation of a Greek word signifying *mad apple* on account of the dangerous effects of the fruit. *Metal* or *Methal* is an Arabic name employed by Serapion, and expresses the narcotic effects of the plant. *Tatula* is altered from *Datura*, a name given to it by the Turks and Persians. (Loudon, Encyc. Plants.) *Datura Stramonium* is the officinal species and is spread widely over the continent, five species being recognized in California. Thus the plant owes its origin and naturalization to this source. The most prominent species in California is the *D. Meteloides*, a very ornamental plant of vigorous growth, projecting numerous semi-procumbent branches from near the root, and covering an area of 3 or 4 feet in diameter. It produces beautiful trumpet-shaped flowers from 5 to 7 inches in length, and which are tinted with violet. In its native localities and in the Eastern States, it is an annual. In our locality the top is annual, the root biennial or perennial.

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The specimen here exhibited is two years old, clean and spindle shaped, with a few small lateral branches; this root penetrated three feet into the cultivated soil.

Stramonium has been known for a long time as a very powerful narcotic poison; but it fell into disuse principally on account of its dangerous properties, being replaced by atropia, which, scarcely less dangerous, was better understood and adopted by the profession. In fact the three alkaloids, Daturia, Atropia and Hyoscyamus have been shown to be identical or nearly so in composition and action; though it may be a question, if isomerism of different drugs, carries identity of action on the human system. Datura, or stramonium, is almost limited to use at the present time, in cases of asthma, in the form of cigarettes, made from the dry leaves and root. This remedy has been used for almost time immemorial. In the earlier part of the century this plant held a prominent place in the estimation of the profession. Dr. W. Darlington, in his Flora Cestrica, 1837, speaks of it as being rather dangerous in unskillful hands, but with judicious and cautious management it will doubtlessly prove a valuable article in the materia medica, and he refers to Dr. S. Cooper's Inaugural Thesis in 1797, Philadelphia, for an interesting account of its properties. Dr. R. E. Griffith in his Universal Formulary, ed. 1859, gives 13 formulæ of the seed and leaves of the plant.

The poisonous properties of this plant have long been recognized; various accidents have happened to children from eating the seeds. The tincture has been given in epilepsy and is recommended in mania, without fever. In Germany and France it was given to produce lethargy and loss of consciousness preparatory to the commission of crime. Orfila states that half an ounce of the extract killed a dog in 24 hours, and quarter of an ounce applied to a wound on another killed it in 6 hours. Dr. Fowler in Ed. Med. Com., V. 163, states the case of a little girl who took a drachm and a half of seeds. In less than two hours she was attacked with maniacal delirium and spectral delusions, in which state she remained most of the following night, with some intervals of lethargic sleep. Next morning, after the operation of a laxative, she fell fast asleep, and after some hours awoke quite well. A child of Mr. Duffin, of London, swallowed about 100 seeds without chewing them. Soon

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after she became fretful and like a person intoxicated. In about an hour she made efforts to vomit, and flushed face, dilated pupils, incoherent talking, spectral illusions and furious delirium ensued. In two hours she lost her voice and power of swallowing, then croupy breathing came on and complete coma with violent spasmodic agitation of the limbs; tetanic convulsions, warm perspiration, imperceptible pulse. Subsequently extremely rapid pulse occurred, tympanitis followed and the bladder was paralyzed; there were frequent unvoluntary stools, probably the effect of cathartics, and death followed in 24 hours. Twenty seeds had been discharged by an emetic and the stools contained 80. None were found in the alimentary canal. These two cases present a broad contrast such as may lead to the conclusion that all the factors were not brought out in the description.

Berkeley, in his history of Virginia, states that some soldiers were sent to Jamestown to quell the rebellion of Bacon. They cooked the young shoots of stramonium for food, "the effect of which was a very pleasant comedy, for they turned natural fools from it for several days. One would blow up a feather in the air; another would dart straws at it with fury; another, stark naked, was sitting up in a corner like a monkey, grinning and making maws at them. A fourth would fondly kiss and paw his companions, and smile in their faces, with a countenance more antic than any in a Dutch droll. A thousand simple tricks they played, and after eleven days returned to themselves again, not remembering anything that had passed."

Prof. J. Rivers, of the State University at Berkeley, is authority for the statement that in Kansas he has frequently seen cows eat stramonium leaves without manifesting any appreciable symptoms therefrom. I have frequently used the leaves in cases of painful hemorrhoids with good results.

An officinal plant, possessing such marked therapeutical properties, should not be dismissed with but a passing notice. Possibly its very activity and dangerous sequences from overdoses may have contributed to consign it to comparative disuse. Dr. Marcet, from the results of experience, regards stramonium as superior to any other narcotic. Phillips concludes his remarks on the plant by stating that though it has much gone out of fashion, it was the deliberate opinion of Trousseau and

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Pedoux, that it can do all that belladonna can do, and is more powerful.

Wood speaks favorably of Datura from personal experience in cases of puerperal mania of a wild and furious character, but intermittent, attended with great restlessness, with sluggishness and scantiness in the secretion of milk, and a suicidal tendency to destroy the child. Cerebral and nervous excitement will thus be allayed, sleep restored, and the milk renewed; the secretions must be watched and warm fomentations applied, with enemas or gentle laxatives, as occasion may require.

Dr. Ott sums up the comparative action of the three alkaloids, atropia, hyoscyamus and daturia, in man: "The symptoms of an overdose of stramonium and hyoscyamus are like those of belladonna. They dilate the pupil, cause nausea, retching, dryness of the throat, vertigo, delirium and mental excitement. In larger doses the pulse is in the beginning depressed, afterwards increased. On the pupil hyoscyamia acts greater than daturia or atropia. Whilst atropia and daturia in large doses produce an eruption, hyoscyamia rarely does so. Furious delirium with great muscular weakness is generated by daturia and atropia, while hyoscyamia produces melancholy, delirium, alternating with stupor. Atropia and daturia paralyze, in large doses, the rectal and vesical sphincters, which hyoscyamia does not. In hyoscyamia poisoning there are convulsions as well as trembling of the limbs. All these drugs have a hypnotic action similar to that of opium, without the constipating effect. Hyoscyamus is used mainly as a hypnotic. Both drugs are used as an anti-neuralgic medicament, and in the cases where belladonna is serviceable." (Ott on Action of Medicines, pp. 126–7.)

The writer sees no reason to doubt that the multiple species of datura on this continent have been derived from seed of the one kind which was originally introduced; and furthermore, that all the species most probably possess the same marked properties, differing in degree only. In furtherance of the investigation of this subject, Mr. F. Binder, a careful and competent pharmacist of Alameda, has in preparation some fluid extract of the root, which he will be happy to distribute among physicians who may desire to try its effects in cases where the other solanaceous alkaloids may be indicated.

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These remarks are not exhaustive. The writer has been prevented by ill health from accomplishing his original design, which may be developed in a more practical manner on a future occasion. Sufficient, however, has been said to commend this important drug to the attention of the profession, as being specially applicable to some phases of nervous diseases, and probably interchangeable, in practice, with other alkaloids.

DISCUSSION.

DR. A. L. LENGFELD, of San Francisco: I believe that Dr. Gibbons deserves more than the usual amount of credit for his careful investigation of this plant, from the fact that on this coast it is so extremely difficult to undertake any original investigations. We are so far away from any laboratories which permit us to test our remedies; so far away from any libraries or sources of information to enable us to find out what other investigators have done in any direction, that any person who, like Dr. Gibbons, undertakes a work of this kind, deserves more than the usual amount of credit. Daturia stramonium was at one time very extensively used, but became obsolete; so much so that I remember in 1890, at the meeting of the Committee for the Revision of the Pharmacopœia, strong efforts were made, and almost successfully so, to omit stramonium and its preparations. Stramonium is an active remedy, but belladonna and hyoscyamus and their alkaloids seem to have entirely replaced it in the medical profession. Probably of the three remedies hyoscyamus is the one most frequently used; belladonna next, and the stramonium rarely or never. Of the alkaloids, atropine is the most frequently employed, but its use appears to be confined to ophthalmic practice, while hyoscyamine and hyoscyne appear to be the alkaloids used in the treatment of nervous disorders and certain forms of insanity; the largest quantities being used in our various insane asylums as sedative and hypnotic. As to the reason why daturine has been neglected I cannot answer. As to its relative merit and advantages as compared to the others, of course only physiological or clinical investigations can inform us. In this State we have no truly physiological laboratory. We hope, however, that with the appropriations so kindly given by the Legislature to the University of California, that in their new building they may have a physiological laboratory, where these

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remedies or suggestions, such as were thrown out by Dr. Gibbons, may be tested and verified. I personally believe that new remedies should be first tried in a physiological laboratory before being applied in clinical practice; but the suggestions thrown out by the doctor are certainly deserving of consideration, especially by those engaged in the treatment of nervous diseases, more particularly in order to see whether stramonium can replace, or whether it has any advantages over, the preparations of hyoscyamus and belladonna.

DR. G. B. REYNOLDS, of Upper Lake: I was particularly interested in Dr. Gibbons' very excellent discourse on the history of stramonium from the fact that it has for a long time been a friend of mine, and it is one of the few remedies that I take pleasure and delight in always growing. I invariably have a few seeds planted in my garden, where I can have the fresh leaves to use in my practice. I have found them the most soothing application in the case of abscess in any place. The doctor mentioned particularly their good effect in hemorrhoids, but they are useful in all kinds of abscesses, and particularly in abscesses on the fingers, around the roots of the nails, in the affection commonly called run-arounds, which sometimes are extremely painful. By taking a few leaves from the stramonium and bruising them, or first heating them by throwing them on a hot stove and pouring boiling water over them, then slightly bruising them, and binding up the painful part, the pain subsides immediately. I have frequently seen people that were writhing in agony and could not sleep immediately lapse into slumber and have no more pain during the night. It seemed to so effectually allay the inflammation that a few applications would frequently take away all the soreness.

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Dermatology.

QUACKERY IN GENITO-URINARY DISEASES.

REPORT OF COMMITTEE ON DERMATOLGOY AND SYPHILIS.

By R. L. RIGDON, M. D., Chairman, San Francisco.

According to the last official directory of the physicians and surgeons of California, there are 138 illegal practitioners in this State. Doubtless some names were not secured, and there are a few regular licentiates who are doing a quack business, so that the actual number exceeds the figures given. Of those recorded, San Francisco has fifty; Los Angeles eighteen; Oakland four; Sacramento three; Bakersfield three; the remaining sixty being distributed over the State.

For the purpose of this article, all who are doing business in an illegitimate manner, whether licensed or unlicensed, will be considered quacks. Nearly all branches of medicine and surgery are represented by these self-styled "specialists," but the chosen department of the majority is that devoted to genito-urinary disorders. This is doubtless due to several causes:

First. Generally speaking, the desire for health is a common inheritance. This is self-evident.

Second. The sexual instinct is universal and exerts a tremendous influence over the individual. In some persons it is less marked, but in others, it is or easily can be made dominant. A fancied sexual perversion frequently causes more suffering than a real lesion of another system.

Third. The abuse of this instinct in early life by a large proportion of males, produces a class sexually unsound, to which must be added those who are affected by later excesses and exposures.

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From these causes arise a large number who are diseased or may readily be impressed with the belief that they are diseased. It would be difficult to imagine a more promising field for charlatans, and, as might be expected, they hasten to occupy it. Many opportunities for good are presented, but, unfortunately, they are not improved. The quack is, as a rule, nearly as ignorant of the subject he treats as his patients, and thereby incapacitated for giving wholesome advice, even did his moral obliquity not prevent.

Little need be said of the devices of the quacks for procuring patients. The pretended philanthropy running through the public appeal is the sweet offered to attract, while beneath is the real motive—getting money. In this motive he does not differ much from the rest of mankind, and if he did no more than enrich himself at his patrons' expense, the charges against him would lose half their strength. It is in the endeavor to secure his fee that the greater injury is done. The patients are positively assured that they are diseased, and are told of imminent dangers that threaten them. Sterility, impotency and insanity are the three evils that are most often pictured as being in store, but any other disease may be associated with them if the mental impression can thereby be made stronger. While the future holds all these in waiting, there is still one avenue of escape—the doctor. By the uses of some wonderful remedy he alone possesses, health and manhood can be restored and these dangers averted. When apprehension for safety and confidence in the "doctor" are established, a satisfactory monetary arrangement is soon made. Treatment ensues, but proving futile, the patients are left with depleted pockets, and exaggerated but none the less firmly established convictions of their dire need of relief from impending dangers. It is this mental condition that is most to be deplored. The lost money can be retrieved, but the distress of mind begotten cannot be so easily remedied.

Until one has had experience with these victims of quackery, it is difficult to conceive of the pertinacity with which the false teachings adhere, and the actual distress that results. Every physician who practices long in the city meets such cases, and the various clinics have their quota. In spite of explanations and assurances and even the exposure of the

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deceptive methods of the charlatan, the evil influence remains.

After having met a number of these cases and expended considerable time in endeavoring to set them right, it occurred to me that, could I gain a more intimate acquaintance with quack methods and be able to speak with the positiveness of knowledge, I might be the better able to correct false impressions. It was with this end in view that I began a series of investigations the results of which are appended. While nothing particularly new was learned, yet the almost universal duplicity of the quacks and their utter disregard for the mental and physical well-being of those who come to them for relief, when presented in tangible form, are so apparent as to be unmistakable, and present a startling arraignment of quackery.

The following synopsis of interviews is taken from reports made to me by medical students, who kindly gave their time, that the facts might be learned. You will notice that in nearly every case mention is made of a precipitate being thrown down from the urine, which was pronounced semen. This is a favorite trick and depends for its success upon the ignorance of the one imposed upon. A few drops of nitrate of silver solution added to normal urine produces an abundant precipitate of chlorides and phosphates, but of course the patient, knowing nothing of urinalysis, at the suggestion of the "doctor" believes it to be semen.

In a consultation at the office of Dr. Putman the patient stated that he occasionally had nocturnal emissions; that he had read that semen often passed away in the urine, and thought his might be doing so.

Question. "How long did masturbate?" *Answer.* "Four or five years."

Q. "Have you any discharge?" *A.* "No."

A. "How often do you dream off?" *Q.* "About once in two or three weeks."

Physical Examination: Said testicles were not in good condition; applied electric current to them and said they did not react properly. Told patient to urinate. The doctor added a few drops of colorless solution to the urine and got a precipitate which he pronounced semen. Told the patient that he was in a very bad condition; that if the trouble was not

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checked he would lose all sexual power; his kidneys might become affected; that he would also be liable to have brain trouble, and that he should not think of getting married until he had been treated. Would charge $25.00 for treatment. Again advised patient, "as I would my own brother," not to neglect his case.

During a consultation with a physician calling himself Dr. Sweaney: *Question.* "What is the nature of your trouble?" *Answer.* "Nocturnal emissions and afraid semen is passing in the urine." Then followed the usual questions, the answers being all strictly within the normal.

Physical Examination: To the urine was added a colorless solution, which threw down a precipitate. *Diagnosis:* Continued loss of semen and beginning Bright's disease. *Prognosis:* Very bad indeed without treatment. Patient might die in a few months or might have brain trouble develop. Strove to impress patient with the serious nature of his trouble. Would effect a cure for fifty dollars.

In a consultation with Dr. Putman, the patient stated that his left testicle sometimes hung lower than the right. The doctor applied electricity to testicles and stated left one was in a very bad condition, and if not treated would, in a very short time be beyond human help, and would have to be removed. The operation was a very dangerous one, and could be done only by experts. He then asked some general questions regarding patient's history. With a stethoscope he auscultated the kidneys and pronounced the left one affected. Said the disease had extended upward from the testicle and almost ruined the kidney, but with immediate treatment he could save it. Demonstrated semen in the urine and said patient would soon be unable to reproduce his kind; that his mind and constitution would soon be run down; that if he should catch cold, fall or strain himself, the testicle would at once swell up, become useless and necessitate its removal. He, the doctor, could effect a complete cure in two or three months at rate of $20 a month. If patient neglected treatment, neither he nor anyone else could cure him.

At the German Medical Institute the patient gave a normal history throughout, but in spite of this, a diagnosis of spermatorrhea was made, and the patient assured that the amount

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of semen in the test tube (the doctor had previously thrown down a precipitate from urine) represented ten drops of blood, and that many times that amount was unconsciously passed every day. That, in a year, complete impotence would result and health be shattered by the constant drain. Was promised a certain cure in four or five weeks. Would give guarantee. Charge, $25.00

At Dr. Jordan's and Dr. Josselyn's similar experiences were met, Dr. Jordan making the cheerful statement that about 90 per cent of the imbecile were rendered so by masturbation, but that he would not positively assert the patient would be so affected.

Many other consultations could be reported, but there is such a sameness running through them, that those given are considered sufficient. I finally became wearied of the diagnosis "spermatorrhea" and determined if possible to get something new. One of the students remembered that within a day or two he had noticed a "heaviness" in the lower abdominal region. This symptom when related to a "specialist" brought out the gratifying diagnosis: "Heart disease—some form of regurgition that might later produce sexual disturbance." This was the only time the monotony was varied. The identical symptom when detailed to the next doctor gave rise to the usual demonstration of semen in the urine and diagnosis of spermatorrhea, with grave prognosis, if untreated.

The foregoing is the kind of advice and counsel that is being given daily in San Francisco, in fifty different offices. How many persons come under the care of these charlatans during the year is not known; but the number must be large. Patients are drawn not alone from the city but from the country as well. By means of advertisements and circulars, every home in California is being visited, and could the facts be known, I have no doubt it would be found that every village and town in the State contains one or more who have been at some time duped by these tricksters.

What is to be done about it?

The conditions that make quackery possible are so fundamental in their nature, that in spite of every effort that can be made, quacks will continue; but this being granted, it does not necessarily follow that we are thereby relieved of responsibility,

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in the matter. Here is an evil that, if corrected at all, must be corrected through the efforts of the medical profession. I hope in the discussion to follow, answers to the above query will be elicited. My own conviction is that a judicious and vigorous application of legal measures will have the most wholesome effect. This, coupled with proper education of the people, will in time reduce the evil to a minimum.

DISCUSSION.

DR. J. ROSENSTIRN, of San Francisco, in opening the discussion, said: Quacks have certainly existed at all times and in all branches of our profession. The successful ones among them possess some prominent features in their character; they have shrewd business methods which make them successful. The speaker mentioned the case of a quack in London, in the 40's, who pretended to be a "specialist" for stricture of the rectum, and who was flourishing in an unheard-of manner. In one of his rooms eleven male patients were distributed on sofas, all with bougies in their rectums, and all having on trousers specially prepared for the purpose. A lady called upon him to be treated for constipation, and was persuaded by the quack that she had stricture of the rectum, and a bougie was introduced. The husband of the lady armed himself with a cowhide and proceeded to the office of the doctor with the intention of chastising him, but soon found himself on a sofa in the office, with a bougie in his rectum, having been persuaded that he, too, was suffering from stricture of that portion of the intestine. These men, by their methods of advertising and by "runners," often build up a large and remunerative practice entirely impossible to obtain in the ordinary and regular way during the same time. It seems to me that the great and good people, educated and illiterate, want to be humbugged. The miraculous, the mysterious, the inexplicable, appeals to their feelings and to their purses. How otherwise could we explain the vast pilgrimages to the holy waters of Lourdes, to the holy coat at Treves, and to the various places where holy bones with curative powers are exhibited? This great and glorious country is a veritable El Dorado for quacks, for nowhere in the civilized world are homœopaths and eclectics numerically and financially flourishing as they are here. In this city we have witnessed the astonishing fact that a number of

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highly educated gentlemen have framed a law whereby the authorities are forced to appoint a certain number of homœopaths and eclectics as physicians and surgeons to the City and County Hospital. Legally prosecuted quacks are often clothed with a crown of martyrdom by the unsophisticated populace that discovers in them victims of a jealous and envious profession. In some of the Eastern States, only those are granted licenses for the practice of medicine and surgery who have passed an examination before a State Board of Examiners, and I would recommend the united efforts of this Society to reach that goal. A great deal of good might be done by the introduction of laws similar to those which I have mentioned.

DR. G. W. DAVIS, of San Francisco: Dr. Rigdon deserves our thanks for his efforts. I believe the best way to fight quackery is the unification of the profession of medicine. If every member of the profession was a true professional man, we would kill quackery and charlatanism very quickly. We should act honestly with ourselves and with the public.

DR. L. C. LANE, of San Francisco, spoke of the case of a merchant in San Francisco who was persuaded by a quack that he was in a dangerous condition, that his blood was vitiated and that his days were numbered. The specialist pretended to be the only person who had the medicine which would effect a cure, and succeeded in getting the patient's money, some few hundred dollars, and his promissory note for $10,000. After being told by a regular physician what a fool he had been, he went to the quack, armed with a revolver, and demanded the return of his note, which was at once forthcoming. The charlatan shook hands with him and said: "Sir, I did not know you were such a gentleman."

DR. RIGDON, of San Francisco, in replying, said: The story told by Dr. Lane shows that it is not alone those of the poorer classes that are imposed upon. All classes are drawn upon by these men. I hope the presentation of the matter here tonight will be the cause of elevating the profession and the people to such a point that quackery cannot exist.

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DISEASES OF THE URINARY ORGANS AS A SPECIALTY.

By L. BAZET, M. D., San Francisco.

Since the use of antiseptics became general, there has been a radical change in surgical practice, and the number and possibility of operations have been increasing almost daily. A new field of experience and observation has been opened to us; a large number of anatomical studies which has been pursued and elaborated could not have been carried out so completely if, as in former times, we had to depend entirely upon autopsies.

Bacteriology is comparatively, a new science, and I need hardly remind you of the progress which it has made in the last few years. It has enabled us to take new views of diseases which were supposed to be something entirely different from what we now know them to be; it has shown us how to define the nature of the poison or infection-producing disease, and which before was quite unknown; in fact, it is to bacteriology that we may attribute the great advances which have been made in the science of surgery within the last fifteen years. But as the field of observation became larger, it became more and more difficult for any individual to grapple with the whole; in trying to know all well we ran the risk of knowing nothing *well*, and of losing material which neither the time nor the facilities at the disposal of any individual could utilize to advantage. So it came about that students of certain branches of our profession classed themselves into categories, and practitioners tended more and more to develop as specialists.

Specialization seems to be in reality both the consequence and the condition of progress; it is the consequence because the great range of the modern medical sciences puts a limit upon our knowledge and thought; it is the condition because he, who would study, treat or prevent disease, will be obliged to limit his influence and his practice to a comparatively small

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number of diseases. Thus the specialist can make a profound study of a subject while the general practitioner merely skims over the surface. It is a long time since ophthalmologists separated themselves from general surgeons; then came the aurists, the laryngologists and the gynecologists, the latter class of specialists being numerously represented the world over.

For several years past, the diseases of the urinary organs have tended to become an object of special study and practice; disciples of Gross, Bigelow, Bumstead, Dittel, Finger, Thompson and Guyon are to be found in all parts of the world, and continue to put in practice the principles learned in the school of their masters.

Having recently spent some time in Paris at the genito-urinary clinics of Guyon at the Necker Hospital, I feel called upon, by my tastes and my new education, to practice this specialty, and I wish to call your attention to its importance, and to the reason why it has become necessary to make a specialty of this branch, and to touch upon the qualities which are indispensable to the person who desires to make the practice of urinary surgery his life work.

1. It would not be difficult for me to show you how important the affections of the urinary apparatus are, both numerically and biologically. In every town you find numerous cases belonging to this class, and in the aggregate they are almost countless.

The fact is, that in addition to the diseases which attack the kidneys and bladder, as well as other organs, and neoplasms and accidental infection, you have anatomical and physiological conditions which in time may set up functional difficulties and disease; for example: hypertrophy of the prostate, which is followed by difficulty of urination and later on, with infection, and perhaps by an inflammation of the ureters and kidneys, which might almost be called a physiological malady; for there are few old men who do not exhibit some hypertrophy of the prostate: so much is this the rule that a large majority of men who have attained a certain age are obliged to pay tribute to this complaint, and should place themseves in the hands of a specialist.

Again, the physiological relationship of the urinary appara-

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tus with the other organs explains the large number of secondary diseases which may attack them. It is hardly necessary to remind you of the diseases of the nervous system, of the brain or of the spinal marrow, whether traumatic or spontaneous, which result is paralysis of the bladder, with retention, which are followed by infection and inflammation. The kidney, being the great emunctory organ of the body, eliminates both the normal and abnormal products of the blood, and the pathogenic relations which are thus established between the infectious diseases in general and the secondary or descending infections are easily understood. In many of such diseases then the urinary apparatus is only attacked in a secondary way and yet it often seems to be the predominant affection.

The diseases of the urinary organs are not only interesting on account of their number, which alone would make the study of them an important one, but also on account of the influence which they have upon other organs, upon the general health of the patient and even upon the conservation of life itself. The diseases of the urinary organs, in the greater number of cases, have a certain influence upon the *morale* of the patient—depressing, often leading to hypochondriasis, sometimes to suicide.

Urinary neuropaths constitute a class of patients well recognized, among whom a small lesion—slight or even *nil*—is the source of great mental disturbance. These people are the victims of a continual preoccupation; a slight humidity of the canal causes them to think of nothing but it, and leads them into a state of sadness and despair. They neither eat nor sleep; they have both real and imaginary pains, and often it requires all the energy of an accomplished and decided practitioner to persuade them—sometimes by violent arguments—that the lesion is of no consequence; that only the mind is affected and that they will be cured only by force of will, courage and efforts to help themselves.

It may be asked why certain patients who have merely an insignificant complaint should be so greatly preoccupied with it, and why others who are attacked by a serious complaint take little notice of it. The only answer to the query, I think, is that some are predisposed to a special nervous susceptibility which makes them hyperæsthetic morally and physically. Such

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persons should never contract blenorrhagia, as it is certain to aggravate their physical and moral disorders.

But there are other cases in which neurosis certainly did not exist previous and who became neurasthenic after a badly treated or half cured blenorrhagia. No matter whether or not a small cause develops the neurosis, or whether we put it on the ground of this sentiment as to procreation or the continuity of the species (which prompts every one to be distressed particularly when the generative organs are diseased), let us bear always in mind the possible effect of a local affection, on the mind and well-being of a subject, though it may not endanger life, and let the specialist remember the importance of moral suasion as well as local treatment.

Affections of the urinary organs reach not only on the mental processes of the patient, but also upon the health of the individual and on the health of the species, and this part of the question, in my opinion, is of the highest consequence in its relation to general pathology.

Genito-urinary tuberculosis is very frequent; it is one of the most common manifestations of local tuberculosis, and from the special point at which it first appears, it may spread through the whole economy and the patient whom you have seen with a tuberculous prostate and epididymis succumbs to vesical, pulmonary or peritoneal tuberculosis.

Infection of the economy is, in this case, carried from the urinary apparatus, and this localization of the disease in the urinary apparatus was caused by a blenorrhagia acquired previously. It often happens that patients suffer from cystitis in the course of treatment for blenorrhagia; the cystitis persists for several months, and the pains continue in spite of the treatment. *Be on your guard* against this blenorrhagic cystitis, for tuberculosis is often sown on ground prepared for it by the blenorrhagia. Here blenorrhagia was the predisposing cause of the general and destructive tuberculous infection.

Where marriage is concerned, blenorrhagia assumes a great importance, since it is so frequent a cause of diseases of the uterus and its annexes. Discussions upon discussions are heard or read on the great number of cases of salpingitis and salpingo-ovaritis which are being daily operated upon. What is the starting point of these periuterine infections? True, lying-

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in and its consequences are fruitful sources. But we often see these symptoms in the cases of women who have never been *enceinte*, so we must look for the cause in genital infection—blenorrhagia.

There are numbers of men who think that they are cured of gonorrhœa, and who at the same time perceive a morning "drop," and who retain in the recesses of their urethra a few colonies of microbes which are ready to come forth and do their work when opportunity arrives. They marry feeling secure, and shortly find that there is an augmentation of their own troubles and more troubles for their wives. I saw, only a few months ago, a family afflicted in this manner. The husband had his matutinal drop even up to the date of his marriage, and he thought it was simply the ordinary and natural sequence of his blenorrhagia. After marriage he was taken with a discharge of the most pronounced character; a week after, he had a polyarticular blenorrhagical rheumatism with endocarditis. The wife contracted blenorrhagia and had at the same time symptoms of perimetro-salpingitis and as they never think of operation, what can become of these diseased parts, inflamed, thickened and suppurating; of these ovaries surrounded by more or less organized adhesions?

This case is not isolated; there are numerous cases of salpingo-ovaritis of which the primary cause is blenorrhagia with or without secondary infection. So you see that the question of blenorrhagia is farther reaching than would be believed at first sight. It not only affects the individual who carries it, but also those whom he may contaminate. Then, there is the other question of uterine and periuterine infections with their consequences and the subsequent sterility of women which may be largely, if not altogether, referred to them.

Then it is apparent that the various diseases of the urinary organs have disastrous effects, both locally and generally, and the specialist should endeavor to prevent or treat them by the most approved methods.

II. In proof of my views as to the necessity of specialization, I beg to advance the following arguments:

It is by semeiology that we arrive at the diagnosis of diseases; the symptoms which must be analyzed carefully in all diseases of urinary organs are not all special, that is, confined to or

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peculiar to the apparatus. There may be painful and difficult micturition, which calls attention to the urinary organs, but there are other symptoms, such as indigestion, fever, pyuria, albuminuria, hematuria and polyuria, which are common in many disorders which only indirectly affect the urinary apparatus. The general practitioner can hardly possess the same aptitude to trace these symptoms to their origin as the specialist who, from his education and experience, is able at once to perceive the relationship existing between the symptoms and their cause.

It is sufficient for me simply to call your attention to the numberless errors in diagnosis into which an insufficient acquaintance with certain symptoms leads some of our confrères.

For instance, digestive troubles are a characteristic of urinary cachexia in its final period, either with or without fever; patients who have been exhausted with continued infection are subject to vomiting, complete want of appetite, extreme thirst and a dry and rough tongue resembling that of a parrot. From these symptoms, the experienced eye recognizes at once the urinary trouble, and the specialist at once directs his attention to the cause of them; on the other hand, the physician may err in diagnosis, and we have known of eminent clinicians who treated patients for chronic dyspepsia or cancer of the stomach, who had merely a vesical retention due to an enlarged prostate, and who by a regular and antiseptic evacuation of the bladder, obtained relief from the digestive troubles and returned to a condition of health in a most satisfactory manner.

Fever is a subject which merits special attention; chronic urinary fever may simulate some infectious maladies like typhoid or intermittent fever, and the physician may not think of examining the kidneys or bladder unless the patient complains. I have seen pyonephrosis on the right side mistaken for a continuous fever. Examples of this kind could be multiplied to any extent, as they are of frequent occurrence and the most of the patients who come under our observation have been previously treated by our brethren who have made other diagnoses.

Albuminuria is another condition which a great many phy-

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sicians diagnose without looking for the cause of the phenomenon. They declare it "nephritic albuminuria," and put the patient on a milk diet. Now, the specialist is not content with knowing simply that albumen exists in the urine; he will look for pus, and if the presence of leucocytes is confirmed, he will recognize the fact that pyuria is the predominant and capital feature. Then the mere presence of albumen becomes secondary; in place of the foolish milk diet, he substitutes the local disinfectant method suitable in such cases.

It is the same with regard to pyuria. We often see patients whose urine shows a large and dense deposit of pus; many physicians would consider this as merely purulent cystitis, and the only treatment given is that for cystitis, which is of no use as regards the principal complaint, which is really a lesion of the kidney. Cystitis is always purulent; the term is commonly used to indicate a septic inflammation of the bladder with suppuration, so that there is no object in adding the word purulent. In many cases, very frequently, it is the kidney and not the bladder which is the cause of the large quantity of pus observed as characteristic of septic renal pus retention, and of those intermittent pyonephroses which slowly but constantly are evacuating their contents. And this fact is so constant in our observations that, to a practiced eye, the deposit in the urine is conclusive, before examining the patient or testing the kidneys, that one or both of the kidneys are affected.

Polyuria is also one of the most important among the symptoms which indicate the condition of the kidney; the slight shades of difference can only be detected by the specialist, who, if he does not recognize the syndrome, at least appreciates the consequences, and this knowlege bears a great importance in diagnosis and treatment. As against reflex polyuria, he will or may conclude that it is mechanical polyuria caused by renal distention in the cases of prostatic patients with distended bladder, and he will conclude from this fact that the ureters and the pelvis of the kidney are dilated, and that they are, so to speak, prepared to receive the slightest infection, and it is necessary to redouble our precautions, by antiseptic methods, to protect the patient from any element of infection to which he is so predisposed. Under certain circumstances, the practiced eye of the specialist will foresee, by the characters of a

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polyuria, an infection of the kidney already existing and ready to become aggravated; then he will formulate a prognosis which will be much more serious than that which the insignificant vesical lesions would have led him to adopt at first sight.

As to hematuria,—how many neoplasms of the bladder, which an early operation would have cured under good conditions, were considered to be "varices of the neck of the bladder"? You see blood in the urine, but there are no pains, nor evidence of localization, and the complaint is attributed to something which does not exist, and which besides is extremely rare. Again, a pediculated tumor of the bladder is not infrequently diagnosticated as hematuric nephritis. Now, the specialist would recognize the complaint at first sight, by the spontaneous characteristics of neoplastic hematuria.

III. In order to be a specialist, is it necessary to be possessed of a special intellectual organization? I do not think so. To the practitioner who will limit himself to a well defined zone, there is no need of qualities different from what he has. He must, above all, be an observer, and by means of that clinical spirit which every physician should possess, take notice of all symptoms, interpret their relations or their consequences, treat them in time and even prevent illness.

We must be observers and clinicians, and this rule would require no explanation, if we did not live in an age when the tendency is to put in second place the observation of the clinic, and subordinate them to the results of exploratory incisions. I do not wish to underrate the value of these operations in every branch of surgery. There are, and there always will be, cases in which all the resources of observation and experience will not unravel their complexity, and in which we will be obliged to have recourse to the bistoury. Exploratory incisions render so great services to surgery that I cannot deny their advantages or contest their utility and their beneficent effects; especially now that antiseptic treatment makes them more certain and contributes to their legitimate employment. But it may be well to enter a protest against the tendency everywhere apparent, which is found in the books and even in official reports and which gives preference to surgical rather than to clinical diagnosis. In reality, cases are rare in which a careful

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analysis does not result in a diagnosis of the greatest probabilities, and here is where a cultivated mind will find an intellectual exercise which is very interesting and gratifying.

The faculty of observation is a fundamental quality, as indispensable to the surgeon as to the specialist. More even than the surgeon is the specialist required to perfect himself by study and education in his character of clinician, because he has to reason about the shades of symptoms more than about the symptoms themselves.

Observation, to be of value, should take the phenomenon itself into account, the conditions which cause it, those which led to its disappearance, and the variations which it may undergo under certain influences. It is not enough to establish the fact of hematuria to constitute a good diagnosis; because hematuria being the fact, no conclusion can be drawn from the mere fact. But if we search for the conditions under which it is produced, we learn that in the cases of certain patients, it is produced by walking and rest will cause it to cease, and these conditions will enable us to pronounce such to be cases of calculous hematuria.

The variety of symptoms is of no less value to the clinician; in initial hematuria, you may suppose that in the urethra, in the prostate, in the neck of the bladder, there exists a cause which may allow the urine to drive the blood from the lesion before it. If it is a terminal hematuria, you may conclude that it is the bladder which bleeds with the last drops of urine which are expelled, and you will decide that it is a case of vesical hematuria, which, according to its association with pain or not, will be from a cystitis or a neoplasm. So the study of a single symptom may furnish the specialist with very complex indications if his mind is adapted to research, and I repeat that the indications furnished by clinical observation are frequently much superior to those which material methods give us.

In case of a special pain with terminal hematuria, the diagnosis will be calculus, and if you are sure of the symptoms you can positively affirm such to be the trouble even better than by exploration, for a metal sound introduced into the bladder may develop an irritation of that organ, with partial contraction, which may for a time hide the foreign body, and if you

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depend upon negative sensations, you will be apt to deny its presence.

It is the same with endoscopy. The electric light provides an excellent means of seeing a neoplasm and locating its seat. But how many errors are such methods accountable for? How many difficulties stand in the way of correct observation? Frequently, the endoscope has indicated pedicular tumor, but the operator has afterwards proved that the true diagnosis should have been an infiltrated tumor subjacent to a pediculated papilloma. But if you know how to interpret the signs of the clinic, and the rapidity of progress of a neoplasm, and when by bi-manual examination you find an infiltration at the base of the bladder, you can say that it is a neoplastic infiltration, and you can safely hold your opinion against the results of an endoscopic examination.

In the specialty, clinical observation is of more importance than in other branches; it is a matter of necessity, and is only acquired by education and persistent work. Of course, a surgeon should prepare himself for special work by the practice of general surgery, for one should not at once enter upon a restricted field; that, in my opinion, would only make one take a narrow view of things, and cause one to lose sight of and fail to appreciate the great laws of human pathology. But, long after having studied and mastered the laws and results of modern surgery, you can enter upon the domain of the specialist, with all the qualities necessary for being and remaining such. To these qualities, gentlemen, are due the real services rendered by specialists to their patients and to science,—to their patients because being well informed as to all the shades and variations of the diseases which he has to treat, he can the more readily seize upon and understand the different therapeutical indications which are furnished to him, he will know how to prevent many lesions, or if not called upon in time will know how to treat them;—to science because, being limited to a zone relatively narrow, his intellectual activity will more easily classify and compare such as are capable of being compared, and yet which may be dissimilar, and draw from them new deductions which may have an immense bearing upon the dual subjects of general and special pathology.

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Ophthalmology.

SYMPTOMS AND TREATMENT OF INSUFFICIENCY OF THE ORBITAL MUSCLES.

REPORT OF COMMITTEE ON OPHTHALMOLOGY.

By H. BERT ELLIS, M. D., Chairman, Los Angeles.

The term asthenopia, according to its derivation, means weak power of sight, but Donders describes it as a peculiar condition consisting of more or less inability to use the eyes continuously for close work without the occurrence of one or more of the following symptoms: fatigue; a strained feeling in and above the eyes, sometimes amounting to absolute pain; blurring of the sight so that all objects appear indistinct; blepharospasm; lachrymation; photophobia; nausea and even vomiting and vertigo. To these should be added headache, either frontal, temporal, occipital or general. There is not necessarily any organic disease of the eyes, and the cause is usually to be found in an error of refraction, generally hypermetropia or astigmatism. This has been called accommodative asthenopia, because other conditions will produce the same line of symptoms, for instance: irritation of the nasal mucous membrane, hyperesthesia and irritability of the retina, and inherent weakness of the extrinsic muscles of the eyes. There can be no doubt that the great bulk of asthenopia is accommodative in its origin, but insufficiency of the external muscles is another very prolific cause of the symptoms mentioned before. Asthenopia, due to reflexes from the nasal mucous membrane or irritable retinæ is, I believe, comparatively rare.

How are we to distinguish the muscular from the accommodative? Primarily, is it necessary to make a distinction? I think not, for in any given case of asthenopia our first care

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is to measure the refraction and test the muscles. If we find both at fault we should correct the refraction before treating the insufficiency, and very frequently, unless the insufficiency amounts to more than 2°, the correction of the error of refraction will relieve the asthenopia and the question is settled. Too frequently, however, the question of muscular balance is taken no account of whatever, and this one fact I believe to be at the bottom of the great majority of our unsatisfactory refraction cases.

Granting that we have corrected the refraction of a given case and the symptoms still remain, or that we have a patient with insufficiency only, we may then be reasonably sure that the cause is muscular, and the question arises: what shall we do?

Let us briefly review the imperfect muscular conditions that may exist. Using the nomenclature of Stevens, we may have insufficiency of the external recti muscles, Esophoria; insufficiency of the internal recti muscles, Exophoria; tendency of one visual line above the other, Hyperphoria. This latter may exist with either Eso- or Exophoria giving us Hypereso- or Hyperexophoria. Any of these conditions may occur in individuals who are otherwise strong and vigorous, but are more frequently found in those whose general health is impaired and whose nervous mechanism is out of repair.

The subjective symptoms do not differ materially from those produced by errors of refraction alone. They are pains in the eyes on using them for any near work, and occasionally in fixing distant objects; this is frequently accompanied by headache which may be fronto-temporal, occipital, vertical or general; and Noyes says that not a small percentage of sick headaches originate in disorders of the ocular muscles. There may be photophobia in varying degrees, and blurring of print due to the tendency to diplopia, and occasionally dizziness.

If the patient be a neurasthenic, or greatly run down from some prostrating disease such as diphtheria, typhoid fever, la grippe or allied troubles, there may be a train of symptoms taking in all the aches and pains flesh is heir to, including the functional nervous disorders, epilepsy, chorea, etc.

It is upon the objective symptoms that we must depend for our positive diagnosis of muscular insufficiencies. Having

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corrected the refractive error we should first look into the muscular condition without calling the muscle of accommodation into action. Placing a small flame six meters from the patient we may at once measure abduction, using Gould's prism battery. Place prisms, bases in, in front of each eye; beginning with prisms of 1° strength, increase by 1° till the candle becomes double; should this occur before the total is 6° we will probably find some error. For adduction place the prisms with bases out before the eyes, and by increasing the prisms over each eye one degree each move, till the candle becomes double, we may quickly obtain the desired information. Adduction may normally be anywhere from 30° to 60°. The ratio should be 1° of abduction to 6° or 7° of adduction.

Place a prism of 7° in trial frames base down over right eye. Two flames should at once appear, one perpendicular above the other; if the upper flame, which is the image seen by the right eye, be to the right as well as above, the images are homonymous, and we have weakness of the externi or abductors, that is esophoria. If the upper image be to the left we call the images heteronymous, which indicates exophoria; that is, weakness of the adductors, the internal recti muscles.

To examine the superior and inferior recti muscles darker the room and use a 10°, 15°, or 20° prism, base in, before right eye. If the two images be not on the same horizontal plane we would have an error in one of the eyes; which eye, a patient examination will reveal.

We may now bring accommodation into use, and measure the muscular action at working distance. Use a prism of 10°, base down, in right eye of trial frames or holder and look at dot on a line at a distance of 12 to 18 in. Ordinarily we will find homonymous images 5° apart, but pay no attention to them; but if more, the condition needs treatment. Heteronymous images are always indicative of error and usually of the externi.

Having found the muscular insufficiency, what shall we do? Dr. St. John Roosa, in his late work on "Diseases of the Eye," says that although he formerly believed that asthenopia might be dependent upon insufficiencies of the external ocular muscles, he has finally come to reject it altogether. He recognizes the insufficiencies, but says they are dependent on

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static fixed conditions of the eyeballs and therefore it is not necessary to measure the relative power of the muscles. "It may be interesting, but it can do nothing towards a proper treatment." In another place he says: "If the student will carefully correct the errors of refraction he will have no need for tenotomies except for strabismus, nor for prisms except for paresis or paralysis of the external muscles." And to add a logical conclusion to his dicta he says: "When we correct strabismus we are always content with removing the manifest deformity dependent upon insufficiency of the muscles. We never cut and cut again for insufficiency of the muscles that the phorometer may declare. If those who advocate tenotomies for latent insufficiencies are right, they ought, by all the laws of logical deduction, to continue their operations here also, until muscular equilibrium has been reached. But all practitioners are, I believe, content with glasses to preserve the equilibrium of the eye and maintain the result of the operation, to wit, parallelism. This is what I advocate for muscular insufficiencies or weakness due to errors of refraction." From these quotations we must conclude that Dr. Roosa does not believe in asthenopia due to muscular inequilibrium; and furthermore, no muscular insufficiency short of manifest strabismus should be interfered with beyond correcting any error of refraction that may exist.

Dr. Ernest Fuchs says, "Only those cases of insufficiencies which cause the trouble or threaten to pass into strabismus call for assistance." Insufficiency of the interni requires consideration mainly, and this may be assisted by prisms before each eye, bases in. For insufficiency requiring more than 6° prisms, tenotomy of the stronger muscles is indicated.

Dr. George A. Berry does not even indicate a line of treatment, but rather leaves us to conclude that nothing is to be done till the latent becomes manifest squint.

If, however, we believe in treatment at all, our first aim should be to put our patient in the best physical and mental condition possible; the refraction having been carefully corrected, we must stimulate the weak muscles or quiet the excessive action or spasm of opposing muscles. Dr. Henry D. Noyes recommends a mode of invigorating the eye muscles which is especially suited to cases where all the muscles are feeble. The

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patient is provided with square prisms of 2½°, two of 5°, two of 10° and one of 15°, and is placed 6 meters from a candle flame. He begins adducting by placing the 5° prism, base out, before one eye, substitutes the 10° prism, then places 5° prism, base out, before the other eye, and substitutes for it the other prism of 10°. He may climb further by adding 2½° prism and then substituting the prism of 15° and so on till he adducts the full amount of 42½°. The patient may in the same manner give his abducting muscles gymnastics, the only difference being that the prisms will be placed before the eyes bases in, and he or she will probably not be able to overcome more than 10°. These gymnastics should be carried out twice daily ten minutes each time for several months.

Whenever abduction at 6 meters is as low as 5°, prisms, bases outward, may be prescribed for constant use; and Noyes adds that his conclusion from recent experience is strongly in favor of the helpfulness of weak prisms continuously worn, for moderate degrees of muscular error, and they have in his practice largely taken the place of gymnastic prisms, and of the various palliative proceedings. He formulates his rule for prescribing prisms as follows: "The base should be placed toward the image whose position is to be corrected, and this corresponds to the weak muscle, provided the physiological or functional action of the muscle is regarded. The apex of the prism like a knife edge indicates the muscle which should be weakened and the base denotes the muscle to be strengthened."

Dr. Geo. T. Stephens says about as follows: Adduction may be greatly improved by gymnastic exercises of the interni, by means of prisms. A prism of say 10°, base out, is placed before one eye, while looking at a candle at 6 meters, when an effort is at once made to prevent diplopia. As soon as the images are blended, another prism, of perhaps less degree, is added. The images being united a stronger prism takes the place of one of those already in use. Thus, little by little, the eyes are required to overcome prisms until the images can no longer be united. All the prisms are then removed and the process repeated, with probably a slight gain each time. This exercise should not last longer than six minutes nor be repeated more frequently than once daily. This is

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practically the method advocated by Noyes, which I called your attention to a moment ago.

Dr. Charles E. Michel develops weak interni in the following manner: Beginning with a 1° prism, base in, before one eye, he has the patient look at an object six meters away for four or five minutes, ten to fifteen times daily at first, later four or five minutes daily, but increasing the time of exercise by two to five minutes daily, and increasing the strength of the glasses till 4° prisms are in use and can be worn with comfort (looking at a distance) for one hour. Then the patient is instructed to read, at first only three to five minutes, increasing the time by two to five minutes daily, until he can read comfortably one hour, four times daily. This exercise is kept up for several months for a half to one hour, three times daily.

Dr. G. C. Savage has a method, which he calls rhythmic exercises, and which he considers useful only in cases where the heterophoria is less than 7°. In exophoria where the interni recti are weak the rhythmic exercises may be utilized by using a lighted taper held at arms' length in front of, and on a plane with, the eyes, fixing the vision on it strongly, bringing it to within 12 centimeters of the eyes, and holding it there two seconds, then closing the eyes for a moment and on opening them directing the vision to a candle 6 meters away; the process to be repeated five to ten times at one sitting, and having two to three sittings a day for several months.

The same object may be attained by using prisms, bases out, before each eye; 1° prisms should first be used, substituting stronger prisms as the muscles grow stronger. The candle is placed 6 meters away, patient looks through prisms five seconds, they are then lifted for five seconds, then replaced, then removed, and so on, from two to ten minutes, but never to the extent of fatigue. The sitting should be repeated from two to five times daily for months. In esophoria where the external recti are insufficient, prisms only can be used, and they must be weak, only from 0.50° to 4° with their bases in; in other respects the procedure is the same as in exophoria.

If the case be one of left hyperphoria of not more than 1.50°, it is possible to develop vertical orthophoria. The left inferior and right superior recti muscles are to be developed, and this may be accomplished by placing from 0.50° to 1°

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prisms, base up, on right eye, and base down over the left eye, and going through the same rhythmic exercises as in exophoria.

Dr. Geo. M. Gould believes that every case of exophoria, and possibly of developed strabismus, is certainly and quickly curable by a rational and common method of ocular gymnastics, and absolutely without operation. His method is to carry the loaded stimulus of convergence slowly beyond near range vision, that is from punctum proximum to punctum remotum and by repetitive gymnastics fixing it there. To illustrate, he says:—" A patient is before us in whom we have determined a power of adduction, at 6 meters, of only 10° instead of the 30° to 60° he should have, an abduction of 6° to 8° and a manifest exophoria of 6° to 8°. Put in the trial frame prisms 10°, bases out, before each eye, and let patient firmly fix upon a small bright object held at a distance of 30 cm. from his eyes; slowly recede, the patient keeping his gaze riveted on the object. If diplopia arise, return quickly to the patient and repeat. In normally healthy young, or young adult persons, one will usually at once be able to carry the object 6 meters away without producing diplopia. Two or three repetitions of this will enable the patient in a minute or two to look all about the room without double vision."

The prisms first used may frequently with advantage be not more than 5° strength, and the power of adduction may be quickly doubled. Five to ten minutes, several times daily, should be utilized in this exercise, with a little reading each time, then if the defect be low and health good a few days treatment suffices. If, however, the health be poor with high degree of heterophoria the return to normal balance is slower, from two weeks to two months.

Some of our text books on ophthalmology contain no word on treatment of insufficiencies; other works which I have not mentioned give much the same line of treatment that I have credited to Noyes. There may be other lines of treatment with which I am not familiar, and if so I hope they will be mentioned in the discussion.

Most of the lines of treatment here referred to proceed on the supposition that the error lies in a deficiency of power of certain pairs or individual muscles. Gould controverts this

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idea and bases his treatment on the theory that, in the vast majority of cases of esophoria, the seat of the difficulty is purely, at least primarily, and always principally, central and innervational.

I have not given you an exhaustive paper either as to the diagnosis or treatment of muscular asthenopia; partly because time is limited and long papers are not appreciated, and partly because the practical points are what the practitioner desires in a paper. I have had some experience with all these lines of treatment, and I have not been perfectly satisfied with any of them. In looking over my case book I believe I have had my best results in exophoria by Dr. Gould's method. In measuring adduction and abduction and in developing the adductors and abductors, I use Gould's "Battery of Prisms," and find them exceedingly useful and convenient. I hope that this paper may stimulate discussion, and bring out your opinions, to the end that a better line of treatment be devised for the present (to me) very unsatisfactory methods.

DISCUSSION.

DR. W. F. SOUTHARD, of San Francisco, in opening the discussion, said: In this very interesting paper Dr. Ellis has given us a clear and comprehensive review of the action of prisms and the method of procedure necessary to produce the effect desired. It can be truly said, I think, that this subject forms one of the most interesting chapters in the study of refraction and accommodation. It is taken for granted that the general practitioner, to whom these remarks are addressed, has not familiarized himself with the subject of muscular insufficiency and its disturbances. For this reason I shall try to make my remarks as clearly understood as possible. The aim of the orbital muscles is to so work in harmony that each eye shall be directed at the same moment to the object looked upon, with the least disturbance of their balance. The purpose is to produce at the visual center the idea of a single stereoscopic image. If by any reason the muscular balance be interfered with, such as loss of innervation of one or more associated muscles, a greater or lesser strain may be thrown upon the coördinating power, which acts to preserve a single image. A tendency may be ever present inclining to the separation of these images, but as long as actual diplopia is not produced there must be

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an ever present watchfulness at the visual center to avert doubling of the images. This action is purely automatic as far as the consciousness of the individual is concerned, but the effects of strain upon the nervous system is none the less serious. If the muscles of the eye-balls had no more work to do than keeping the eyes parallel, so that the images of distant objects be correctly focused upon like portions of the retina, there would not be so much complaint of muscular insufficiency. We desire, however, to see objects which lie nearer to us than what is termed the far point, the point from which rays are considered as parallel; hence a new element enters into the mechanism of seeing. Up to this point we have looked upon the two eyes as a single eye set in the middle of the forehead, the two eyes moving in all directions, up, down and from side to side, as a single eye, in conformity to Hering's well-proved theory of associated movements of the eye-balls. When we come to look upon objects inside of the far point two new factors are brought into action, viz: accommodation and convergence, and this action is governed by an innervation of its own. If it were not for this innervation "we would see all near objects double, from inability to converge the visual axis upon them." It is at once perceived that although the proposition that the two eyes should be focused upon the same subject at the same time to see distinctly is simple enough, it must be conceded that it is in reality a matter of some complication. Accommodation, which is simply a focusing of an object, is not attended with any movement of the eye-ball if the opposite eye be covered; it is when we look with both eyes that the action of convergence is brought into play. As the object is brought nearer to the eye, and the focus or accommodation changes, the two eyes tend to approach each other so that the visual axis may constantly meet upon the object looked at. It is then easy to understand that there must be an intimate connection between accommodation and convergence, and that there is a certain rate of action between the two which must be maintained for any point within twenty feet. Another interesting fact is that at the far point, that is, twenty feet beyond, when accommodation is supposed to be at its minimum, or state of rest, there is still convergence. In other words, the old notion cannot be longer maintained that when there is the

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least amount of convergence the eyes are parallel and adjusted for distant vision; that is, for parallel rays; the truth being that from the time we open our eyes in the morning until we close them in sleep at night there is convergence, and in hyperopia and hyperopic astigmatism there is accommodation also; in a word, the minimum of convergence is not parallelism, but divergence. This has been proved in several ways. If the eye-lids of a person under an anæsthetic be raised the eye-balls will be seen to be rotated upwards and outwards. In sleep and after death the same position of the eyes may be found present. Dr. Joseph Le Conte found the same thing to take place in drowsiness in his own case. In drunkenness we may also observe the same condition. This demonstrates the fact that there is an initial convergence which brings the eyes from this relaxed or divergent position to one of parallelism. To keep this parallelism for distant objects, then, there must be a constant state of innervation of the ocular muscles to prevent the eyes from seeing double. This work is accomplished by latent action of the internal recti muscles. When we converge the eyes for a nearer point this action becomes positive and evident to the observer. If the same nerve impulse is conveyed to any associated pair of muscles, brought into action at any moment, as for example the internal recti of each eye, then binocular vision may be maintained without conscious effort.

Since, however, the result aimed at is always to preserve binocular vision, loss of innervation of one muscle may result in preservation of binocular vision, only at great cost to the coördinating apparatus. In the use of the eyes at the near point, as for example by students, bookkeepers, artists and the like, great disturbance of the nervous system, such as headaches, dizziness, blurring of the vision, etc., may follow from this overstrain. As a rule, there is present some error of refraction, but not always, in these cases of unbalance of the ocular muscles. If there is an error of refraction it may cause such a difference in the size and shape of the images upon the retina that eye strain will follow from the constant action of the ciliary or accommodation muscles acting together with an unequal power of the ocular or convergent muscles. To show whether or not there is a weakening of the innervation of one

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or more muscles, a prism of 5 to 7 degrees, base up or down, is placed before one eye. The uncovered eye will now see the true image of the object, while the covered eye by the prism will see a false image above or below the first, according as the prism is placed, edge up or down. Since it is hopeless for the visual centers to cause fusion of the two images thus doubled, we can easily discover the amount of latent deviation which has been overcome by the constant desire to fuse two images into one. If we find, when looking at a candle at 20 feet distant the false image to be to the right or left of the true image we are able to tell the amount of latent deviation. We may have latent divergence, though no error of refraction exists. There are those who hold that this loss of convergent power is always due to errors of refraction; that when the error is corrected the muscular balance will return. This is true in many, perhaps a majority, of cases, which could be easily explained had we the time. There is, however, a very large number of persons who, though having very slight, if any, error of refraction, are painfully deficient in convergent innervation. I am willing to go further and say that under certain circumstances from excessive work at the near point, an emmetrope may be as great, or even a greater, sufferer from lack of muscular balance than a person having a fairly high degree of refractive error. If the balance between the internal and external recti muscles is about six or seven to one there is not much doubt of their ability to fuse images at all distances when visual acuteness is normal in both eyes. The moment an image is weakened that eye tends to deviate. If you cover one eye with a red glass and two candles are seen, there is no doubt of muscular unbalance. These cases occur not infrequently, and they are just those that give us the greatest amount of trouble to restore to usefulness; and it is also in just such cases that we get our happiest results when a judicious use of the prism has been made. This leads us to this point, that, having corrected an error of refraction, we cannot always send a patient off with the words: "Now you will have no more trouble with your eyes, for you see perfectly well with each eye." We must not rest satisfied until we have tested the muscular balance of the eyes and learned their power of maintaining a single image at any point.

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Such cases as the following not only demonstrate to us what disturbances may take place when the muscles are out of balance, but the gratification of the patient when the results are satisfactory. A professional gentleman, with an error of refraction of ¼°, came to me with a history of headaches of a severe type, insomnia, weakening of memory, in fact, a state of almost nervous prostration. He wore dark glasses, for light was painful to him. Print was constantly blurred and eyes were frequently red after use at the near point. I found in testing with candle at 20 feet that when one eye was covered with the red glass the images at once separated and he could not bring them together, the covered eye at once diverged. Maddox rod-test and prism, base up, gave similar results. Almost immediately on using homatropine his head and eyes felt better. It was with great difficulty that I could break up the spasm of accommodation. His refraction is slightly hypermetropic, yet before being put under the mydriatic he accepted a concave lens. The final result of using prisms having regular orthopedic exercise three times daily was most happy. The patient found very soon that by use of prisms just before retiring he could get a better night's sleep than when he neglected this exercise. This question of muscular innervation and its correction, or rather its strengthening by the use of prisms, is well worth the study given to it. So much depends upon a right interpretation of the symptoms accompanying muscular weakness of the eyes, and the correct application of the means at hand for remedying the defect that we may well be pardoned when we say that there is a great deal more in the subject of refraction and accommodation than the mere putting of glasses before the patient's eyes to procure visual acuteness. In conclusion, I would say that though this may seem a somewhat complicated subject, there is one plain fact, namely: That when a patient comes to us with disturbances of vision we must not rest satisfied with correcting the error of refraction and giving normal acuteness of vision, but we must see to it that binocular vision is preserved at the least possible expenditure of nerve force of the coördinating apparatus.

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THE RELATION OF ERRORS OF REFRACTION TO SOME OF THE SO-CALLED REFLEX MANIFESTATIONS.

SUPPLEMENTARY REPORT OF COMMITTEE ON OPHTHALMOLOGY AND OTOLOGY.

By WM. ELLERY BRIGGS, M. D., Sacramento.

The request of the Chairman of the Ophthalmological Section of this Society and the hope that more general discussion of this important subject may bring about more uniformity in practice, has induced me to write a short paper on this topic. No one of experience in treating eye troubles doubts that refractive errors are the cause of many reflex manifestations. There is, however, a great disparity of opinion in regard to the kinds and the degrees of the refractive errors which give rise to such reflex symptoms.

At the present time the tendency of American oculists is to place great importance on the low degrees of ametropia. The enthusiasts claim that the low degrees of refractive errors are more potent for evil than the higher degrees. Their explanation is that eyes with slight refractive errors make an extra accommodative effort to secure distinct images, while eyes with greater degrees of ametropia find it impossible to clear the vision by the extra strain and do not therefore make the effort.

As far as my observation goes, European oculists pay little attention to minor degrees of ametropia. Many believe it impossible to detect ¼ dioptre of astigmatism. Some Americans claim to detect and correct even smaller degrees than that. Many American oculists also attribute great importance to the slight unbalance of motor oculi muscles. During the past few years the performance of tenotomies and partial tenotomies has been carried to an absurd extent. A case has been reported in which the surgeon performed the nineteenth operation on

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the patient's ocular muscles. After each operation the patient considered himself "much improved," but he had nearly lost the ability to move the eyes. In order to look to either side he was obliged to turn the head to fix the object. European observers express the same incredulity as to the importance of these slight departures from muscular balance as they do in regard to the influence of the minor degrees of ametropia.

The great disparity in practice between European and American oculists is not easily explained. A partial and perhaps complete explanation can be found in the highly neurotic tendency of the American people, which makes them particularly sensitive to the disturbing effects of slight refractive errors or muscular anomalies. Various conditions of life which are common in this country are conducive to the development of a highly sensitive nervous organization. Among these conditions may be mentioned the hurry and excitement, speculation and haste to become wealthy; dyspepsia, the national ailment; the rigorous climate of the Northern, Atlantic and some of the Western States, and the early age at which children are allowed the privileges of adult life. The premature grey hairs, the wrinkled and thin faces attest the early decadence of nerve force. In other countries one rarely sees a young person with grey hairs, while in our country it is a most common occurrence. The mild and equitable climate of the Pacific Coast has a soothing effect upon the nervous system, and, other things being equal, there are less nervous ailments here than there are among our countrymen on the other side of the Rockies.

The general practitioner is not likely to place too great importance upon the reflex symptoms of eye strain. The wisdom may be questioned of my pointing out what I believe to be a fact that some oculists and most opticians resort to the use of glasses too often. If the eyes are given little rest, or if better hygienic rules are observed for their cure, or if some general disturbance is corrected, many of the symptoms for which glasses are prescribed will often disappear. On the other hand the family physician errs quite as often by continuing for months or years to prescribe internal medication for headaches and other nervous symptoms which are promptly and perma-

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nently relieved by properly adjusted glasses and which can be cured by no other means.

The reflex symptoms produced by refractive errors are asthenopia, headache and epilepsy. Under the head of asthenopia are included a great variety of symptoms varying in degree from a slight ocular discomfort or strained feeling to photophobia, lachrymation, nausea, vertigo, and violent hemicrania. Chronic marginal blepharitis and conjunctivitis are common accompaniments of the asthenopic symptoms. These symptoms as a rule indicate the presence of some refractive error and are principally produced by use of the eyes at close range. They may also arise from defective vision for distant objects. All the symptoms may also be present in people with perfect refraction and muscular balance, who use their eyes excessively or whose constitutional condition is such as to weaken the power of the muscles of accommodation. Most people suffering from asthenopia are unaware of the relationship between the head symptoms and the ocular condition. Patients often resent the suggestion that the eyes may influence the head symptoms, insisting that their vision is perfect. Latent hypermetropia or astigmatism of quite a high degree may be found after atropine instillations to be the cause of the asthenopia.

The term asthenopia is often made to include all kinds of uncomfortable vision, not the result of ocular disease. The difficult and important point to decide in each individual case is the relationship between the ocular condition and the group of symptoms classed under the head of asthenopia. It is impossible to decide by the subjective symptoms whether they are caused by some ametropia that glasses can correct, whether they are the result of nervous exhaustion or whether they have been brought on by taxing the eyes more than they can endure even though they have normal refraction and visual acuteness. These facts can be determined with any degree of certainty only under paralysis of the muscles of accommodation.

The question as to how much relief one can expect from the correction of minor degress of ametropia is very important. Undoubtedly as weak glasses as ¼ dioptre cylinders and ½ dioptre spheres in many cases give great relief. Such glasses improve the vision so little as to be barely perceptible, but often relieve distressing symptoms. It is equally true that compara-

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tively few people who have those degrees of ametropia ever suffer any inconvenience from that condition. A large proportion of people who find comfort from these weak glasses for a time are able to dispense with them without discomfort after the eyes have become rested, or the general health has been improved.

Donders first pointed out the relationship existing between asthenopia and hypermetropia. Since his time much has been written on the subject, but little new knowledge has been added except the fact that astigmatism also plays an important role in the production of asthenopia.

Eye-strain is a common cause of headache. The head pains may be of almost any character, and located in various parts of the head. The pain is frequently complained of in the frontal or temporal regions, but also may be seated in the occipital region, radiating down the neck.

Recently Dr. Ambrose Ranney has been urging that ocular conditions play a large part in the production of epilepsy. He has reported a number of cases in which the correction of hypermetropia and astigmatism, and the correction of muscular unbalance by graduated tenotomies markedly benefited many epileptic patients. It seems probable that children predisposed to nervous disorders may have their nervous condition aggravated by any unusual strain upon the ocular muscles either external or internal. Two epileptic children whose hypermetropia I corrected within the past three months, have neither suffered from an attack since wearing the glasses. The period has already been longer than they have usually gone without epileptic seizures, but it is still too early to form an opinion based on these cases.

As illustrative of cases one meets in daily practice I will report a few from my note book.

CASE I. Mrs. T., aged 28. She was a frail woman, who had suffered pretty constantly during the past year from frontal headache. Six months previous to my examination a traveling spectacle vender had sold her glasses which were found to be perfectly plain. Without atropine her vision was perfect without glasses and not improved by them. Under atropine she was found to have one dioptre of hypermetropia and half a dioptre of hypermetropic astigmatism, with axis at 90 de-

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grees in each eye. Correcting glasses were ordered for close work with perfect success.

CASE II. R. F., aged 11 years. The boy often complained, after study for some time, of severe headache. The teacher also noticed that the child held his books too close to his eyes. He was found to have +.75 D. astigmatism, with axis at 90 degrees in both eyes. He has been wearing the correcting glasses constantly for several months with perfect relief to all symptoms.

CASE III. C. P., aged 32 years; carpenter. Had been suffering pretty constantly with severe headache for several months. He was found to have + .5 D astigmatism with axis at 180° for each eye. Glasses relieved him almost completely.

CASE IV. Miss S., a teacher; aged 35. She had suffered ever since she could remember from severe headaches and weariness from study. She believed the pain to be the result of some nervous disorder. This view had been accepted by a number of physicians who had each given her internal medication without permanent benefit. After more than twenty-five years suffering, during which time she was incapacited at frequent intervals from any occupation, she was directed to consult an oculist. She was found to have —2 D of astigmatism, axis at 180° for both eyes. Since wearing these glasses she has been entirely free from headache with the exception of one day when an accident happened to the glasses so that she could not wear them, and before night the pain returned with its previous severity.

CASE V. R. J. P., aged 26. This young man had been wearing weak plus cylinders which had given him relief for some months, but on account of the return of headache, especially after use of the eyes, he came to see if the glasses could not be improved. Vision of eye. Right eye was found to be improved by —.25 D cylindrical glasses, axis 120°; left eye —.5 D cyl., axis 165°, both for distance and reading. These glasses were worn with perfect relief to all symptoms.

CASE IV. C. H. C., aged 33. Had always had "weak eyes" and had suffered greatly from frontal headache. He was found to have —.2.5 D of astigmatism, axis 180° in both

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eyes. He has worn these glasses with complete relief to his symptoms and great improvement of his vision.

It is needless to multiply cases, as these reported are average samples of the results obtained by correcting ametropia in cases of persistent headache. It is not intended to convey the impression that such results are uniformly attained. It frequently happens that the most carefully adjusted glasses do not have the desired result. That is not infrequently the case in my experience if one corrects all the latent hypermetropia or fully corrects high degrees of astigmatism.

In conclusion, I will formulate in a concise manner some of the points I have tried to bring out in this paper:

1. All cases of persistent headache which are not traceable to some other condition should be examined in reference to some ocular cause for the trouble.

2. As a rule, some ametropia will be found which glasses will correct, and which will relieve the head symptoms.

3. Generally it is unnecessary to use atropine, as the correction of the manifest error is usually sufficient.

4. In cases in which correction of latent error does not give relief and cases in which there is a tendency to strabismus, full correction of the latent hypermetropia or astigmatism should be made.

5. The fact that the patient has normal visual acuteness does not indicate that the head pains may not be produced by eye-strain.

6. Epileptic patients whose attacks are not caused by some known pathological condition should have their eyes examined under atropine with a view of determining if any ocular condition exists which can influence the nervous attacks.

7. Opticians are rarely competent to examine for glasses, and spectacle venders, who infest the country districts, are usually both ignorant and dishonest.

8. Oculists not infrequently prescribe glasses for too slight causes.

9. The family physician too often treats persistent headache by internal medication which can be permanently relieved only by correction of some ametropia.

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SCROFULOUS INFLAMMATION OF THE EYE IN CHILDREN.

SUPPLEMENTARY REPORT OF THE COMMITTEE ON OPHTHALMOLOGY AND OTOLOGY.

By K. PISCHL, M. D., San Francisco.

Do not expect to hear much that is new from me to-day; but I hope that you will allow me to recall to your memory some facts in ophthalmology, which, in your busy life as general practitioners since you left college, may have escaped your memory. If I add a few remarks new and interesting to some of you I will be gratified.

Scrofulous affections of the eye are frequent enough to warrant reviewing. Let us take a typical case: A child about 3 years old is brought to the office by its mother, poorly dressed, the clothes smelling from dampness. The child's head is bundled up in a large handkerchief. After its removal the child buries its face in the folds of its mother's dress, covering its eyes with its little hands. The child looks pale and thin or bloated and flabby. When you turn the face towards the light, you see as signs of scrofula eczema at the nares; upper lip and nose swollen; nose-breathing impaired by hypertrophic rhinitis or enlarged pharyngeal tonsils; glands in the neck and below the lower jaw swollen. Sometimes we find as a result of suppuration of these glands ulcers or disfiguring scars of the skin. The eyes are spasmodically shut, lids are swollen, the eyes water, the child complains about pain in the eyes. Closer inspection reveals that the eyelashes are stuck together in small bunches by crusts and scabs, after the removal of which small round ulcers appear on the borders of the lids, just where the eyelashes pierce. At the external commissure we see excoriations caused by the constant flow of tears. The opening of the lids to inspect the conjunctiva and cornea is very difficult. I generally put a drop of cocaine in the inner corner of both eyes, and, after waiting for a minute, put the

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child on the mother's lap, hold the head between my knees and inspect the conjunctiva by opening the lids partly with my fingers and use the elevator to enable me to inspect the cornea. The conjunctiva is injected, often presenting a velvet-like surface; the conjunctiva of the eyeball contains well-filled vessels, the injection increasing towards the limbus where under the superficial vessels of the conjunctiva the pale violet ciliary injection is visible.

Only in mild cases where no photophobia hinders inspection we find the typical large red nodule-phlyctænula—on the limbus or near by in the conjunctiva, towards which injected conjunctival blood-vessels run in the form of a triangular sector. Our struggling little patient shows the whole cornea encircled with small nodules partly confluent to ulcers. The cornea may be clear or show some grey round infiltrations which may, by destruction, be advanced to superficial ulcerations. The aqueous is clear, the pupil may be a little narrower but reacts on light promptly. With the child struggling and crying, the eyeball turning up, I often use a forceps to pull the eyeball down to have a glance at the cornea. In such cases, solution of fluorescin grs. 5, natrii carb. grs. 7, aqua dest. ʒ½ is instilled; what is superfluous washed off with lukewarm salt water or boracic acid solution, serves me very well. Every loss of epithelium of the cornea or fresh infiltration is colored bright green, which facilitates the diagnosis materially.

The further development depends upon the involution of the nodules. In the most favorable cases they become smaller daily, and finally disappear without leaving any mark. If the infiltration in the cornea extends through Bowman's membrane into the parenchyma proper of the cornea by its breaking down, a deeper ulcer is produced which will, when healed, cause a permanent opacity. In the severest cases the ulcer perforates the cornea, and the aqueous rushing out often brings the iris into the opening, which will form an anterior synechia and cause a pear-shaped pupil.

Quite frequently a small ulcer on the rim of the cornea clears itself at the peripheral half to which from the limbus fine blood-vessels run, but the margin toward the center of the cornea remains grey, infiltrated. Inasmuch as at this place the infiltration and the subsequent breaking down keeps on ex-

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tending, the ulcer constantly advances towards the center of the cornea, while on its peripheral side it heals equally fast and draws the blood-vessels after it. This keratitis fascicularis never causes perforation, but leaves a superficial opacity of the cornea which, from its form, enables us to diagnosticate the previous existence of a vascular fasciculus. A special form is the pannus scrofulosus which is distinguished from trachomatous pannus in that it develops from any part of the corneal margin, while the trachomatous shows a predilection for the upper part of the cornea.

The prognosis of the scrofulous inflammation is favorable so far as the eye is but rarely rendered blind by it; but as every deep infiltration and ulcer of the cornea leaves an opacity by frequent attacks, the sight may be permanently injured to such an extent that the patient will never be able to do fine work. As this disease has great tendency to repeat its attacks, such unfortunate children fall behind in their physical and mental development, therefore our aim regarding the therapy must be to prevent such attacks by bettering the general health.

It is out of place here to speak minutely about the treatment of scrofula; that is the field of the general practitioner rather than of the oculist, but I would like to state that I recommend for such children a sunny house, well-aired rooms, windows partly open all night, a dry yard where the children should be during the day. To help the working of the skin and to harden them at the same time against colds, I order cold sponge baths with salt water every morning. I try to induce the parents to give their children regular meals of wholesome food. In the second place I order codliver oil, or iron, iodide and arsenic. The children should be seen at the beginning at least daily as the development of this process requires constant observation. If they are brought to the doctor's office it is a good opportunity for the children of the poor to get into the fresh air.

Among the local remedies, calomel has long been known as a specific remedy for scrofulous conjunctivitis. Lately dermatol has been recommended. Even if, besides the infiltration, there is conjunctivitis catarrhalis, calomel has good effects. There are cases in which the conjunctivitis catarrhalis is the only

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manifestation, but if the appearance of the little patient points to the scrofulous nature of the disease, calomel should be dusted in; sulphateof zinc would not give satisfaction. When applying calomel, I use a soft camel's hair brush; after shaking off the greater quantity, I lift the upper lid and by tapping the brush cover the cornea with a fine coating of calomel. I do not pull down the lower lid, as sometimes the calomel forms into small lumps and acts as a caustic. Above all, I warn you against the application of lead-water (liquor plumbi subacetatis dilutus) which leaves incrustations of the cornea if there is a fresh loss of epithelium.

When the nodules are broken down to ulcers, calomel may be given just the same if the ulcers are in the limbus. If they are located in the cornea we have to be more careful. We may try calomel if we can see the patient the following day, but if there appears in the cornea ulcers with base and borders infiltrated of gray yellowish color, calomel is too irritating. We have to bandage the eye, changing the cotton as often as it is wet by the tears. Hot applications three times a day, one-half hour each time, have good effect. I prescribe corrosive sublimate, 0.1, aqu. destil. 250, with a package of absorbent cotton. The attendants are instructed to pour into a cup equal parts of this solution and boiling water. After washing their hands with soap and water, they should soak a piece of cotton in this hot solution for the hot application, which generally heals co-existing excoriations of the lids. If the ulcer still progresses I would advise you to scrape the base and borders clean and wash the eye with a weak antiseptic solution. I do not recommend to you the use of the electro-cautery, as it is impossible to limit the action of the heat to the spot. You are liable to injure healthy tissue, especially in a child struggling with all its might.

As soon as all signs of inflammation are passing off, photophobia and tearing disappears; we can apply the yellow oxide of mercury—

Hydrarg. oxid. flavi..... 0.1 to .06
Lanolini..... 15.0
Olei amygdalarum dulc..... 4.0

which is put in under the lid with a glass rod.

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For the ulcers on the borders of the lids and excoriations at the lid cornea, I use nitrate of silver, 5 per cent. The eyelashes which perforate the ulcers must be removed. Against photophobia, in the fresh cases, I found an excellent remedy in plunging the head of the child into cold water for a few seconds; the struggling children are often so shocked by this that they breathe quite deep and look around surprised, opening both eyes well.

I have not spoken of atropia for the simple reason that I do not consider it necessary to apply it.

The iris is not affected in this scrofulous conjunctivitis, and if the corneal ulcer threatens to perforate, eserine, 5 per cent, pilocarpin, 1 to 5 per cent, is better applied, as by lessening the tension they may prevent the perforation, or at least the prolapse of iris.

After the inflammatory process has passed away, calomel or later yellow salve should be applied every few days for some time. The eczema on the nose needs an application of a protecting salve. The nose should be kept free by a cleansing spray. Seiler's tablets or Dobell's solution answers this purpose. Antipyrine, 1 per cent, causes a decided contraction of the swollen turbinate bodies.

After the first attack is over, I try to teach the application of a rubber bougie with rose salve for internal massage of the nose. If the nose breathing is prevented by an enlarged pharyngeal tonsil, this should be removed.

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OCULAR LESIONS ASSOCIATED WITH CONSTITUTIONAL STATE.

SUPPLEMENTARY REPORT OF COMMITTEE ON OPHTHALMOLOGY AND OTOLOGY.

By H. I. JONES, M. D, San Francisco.

The principle of the familiar adage of *mens sana in corpore sano* is as applicable to the sight as to the mind, and a person whose whole system is debilitated should not expect full duty of his eyes. In proposing to make some remarks on the relationship of eye disease to lesions in other parts, I ask you not to expect new nor original statements. I merely purpose to communicate some of the impressions which I have received from observation.

The ophthalmic surgeon in active practice meets constantly with a diseased condition of the visual apparatus, though easily preventable, if the case be recognized sufficiently early, and when once established incurable. It therefore behooves the general practitioner, who on all hygienic conditions should be the family adviser, to be able to recognize any impending danger that may threaten the integrity of this important organ, and at once apply the proper preventable measures. I very often hear the general practitioner say that he regards disease of the eye as a sealed subject. I hold that every surgeon and physician should be familiar with ophthalmic diseases, though he may not become a skillful operator, as it is well known to the laity that such proceeding requires constant practice, proper instruments and experience in after treatment.

The eye is not a separate autonomous organ, living as it were a life apart; nor is it a mere appendage or accessory convenient and advantageous to the rest of the organism; on the contrary, it is in the closest relationship with the rest of the body, and an integral and delicate part of the nervous system. The association of ocular lesion with general disease is deter-

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mined partly by anatomical connection, but chiefly by their embryological origin. There is a close communication between the lymph spaces of the eye and those of the brain and spinal cord. Very little experience in the observation of diseases of the eye is needed in order to discover that while some of those diseases are strictly local or due to external causes, there are others which are associated with morbid constitutional states. Contagious ophthalmia, the effect of injuries, errors of refraction, are common examples of local affection; and the ophthalmia of strumous children, the keratitis, iritis and choroiditis which occur in syphilis, and retinitis met with in kidney disease, are equally common examples of ocular lesions associated with the constitutional state. The fact of an intimate relation between disturbances in other parts of the body and disease of the eye is well known. Neuro-retinitis, retro-bulbar, neuritis and C. are very often due to rheumatism, menstrual irregularities and renal disturbances. If the normal conditions of the eye are first thoroughly fixed in the mind, the abnormal phenomena will be detected readily. My experience in my own practice and the accumulated experience of others teach me that it is only by careful attention to all the necessities of the *whole system* that we really benefit our patient.

I will call your attention first to *ophthalmia neonatorum*, the eye having been infected by the mother's uterine or vaginal discharges. Statistics tell us that fully 50 per cent of the inmates of our blind institutions owe their misfortune to this terrible disease. Just fancy what it means. It does not mean blindness coming on after a long life of usefulness or pleasure; it does not mean dimness of vision admitting of more or less hopeful treatment; it does not mean deranged sight or blindness of the eye; it means blindness of both eyes, total, irreparable, coming on in the very earliest days of infancy and lasting throughout the whole of many a long, weary, tedious, desolate life. Now this disease is not caused, as many have believed and taught, by a cold, by a draught, or by sudden exposure to concentrated light. It is caused by the direct inoculation of the child's eyes with the secretion of the mother's vagina, most likely gonorrhœal, possibly leucorrhœal, or other discharge, and a process of proliferation of the epithelium ensues. Of course it is possible to arise from impurities entering

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the eye after birth, derived from foul linen, dirty water or sponges.

All this points to an antiseptic method of treatment, and the plan suggested by theory is found to be more advantageous in practice. Of course many of the cases have been under the care of midwives or under no care at all. Others are incurable from the moment they are first seen, resisting all remedial means, but in some I think better results might have been obtained if the serious nature of the affection had been earlier recognized, and if the family physician, instead of giving verbal directions to perhaps a careless or ignorant nurse, had himself taken the trouble to attend to the infant. If the family physician has the least suspicion that the mother is suffering from any irritating discharge, he should instill a 2 per cent solution of nitrate of silver into both eyes, according to Crede's method, which in brief consists in washing the outer surface of the eyelids with plain warm water, separating them slightly and letting a drop of a 2 per cent solution of nitrate of silver fall from a glass rod on the cornea. He makes this application immediately after the cord is severed. It is, as you all know, in the early stage of the disease that most advantages can be obtained from treatment. A few weeks ago I had a deplorable case presented to me at the dispensary. The mother exclaimed, bursting into tears, "Will my baby see?" I ascertained that both eyes had been infected for two weeks, and that the family physician had said that it was a "cold" and prescribed some eye wash. I succeeded in arresting the discharge in a few days, but one eye was lost from sloughing and ulceration of the cornea, and in the other deep interstitial keratitis had taken place. Since, then, ophthalmia neonatorum is so fruitful a source of blindness, every effort should be made to prevent its occurrence.

Phlyctenular ophthalmia, which is next to the purulent form, is the most annoying, harassing and dangerous variety of eye disease to which children are subject. It is a common sequel of acute inflammatory diseases of childhood. It has also been regarded as a manifestation of scrofula. Arlt in his work calls it conjunctivitis scrofulosa. You have frequently seen in your office this picture: A child between six months and three years is brought to your office. The child is either screaming

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or has its face tightly pressed against its mother's shoulder. The face picture is typical. The eyes are closed spasmodically tight by the swollen eyelids, and scalding tears run down over the cheek, because the swollen nose cannot provide for the overflow, while most significant of all is the swollen upper lip which looks as if it had been recently stung by an insect. The digestion is always deranged and the appetite capricious; the child is given both tea and coffee and very little, if any, milk, sweet things *ad libitum*, pies, etc. They sleep with their faces buried in wet pillows which act as a warm poultice, and encourage swelling and congestion. Both eyes may be affected simultaneously. Small vesicles appear on the conjunctiva or cornea, preceded by some redness and irritation. After remaining a few days they burst, and present an ulcer. There is great intolerance of light and blepharospasm which varies in severity in different individuals. (Do not forget that dread of light without accompanying conjunctival or corneal irritation means retinal irritation and wants prompt investigation.) These cases are dependent on derangement of the alimentary canal and catarrhal affection of the nasal and post nasal mucous membrane.

The appropriate treatment far more depends upon just conception of the general condition, diet, hygienic surroundings of the patient, than upon any specific or local measure, and it depends upon the faithfulness of the mother and the firmness she proposes to exercise in the execution of the doctor's orders. Sweets, pastry, as well as tea and coffee, are strictly prohibited. Starchy foods are to be avoided. Constitutionally give a little calomel and compound rhubarb powder. Locally, after bathing with solution of boric acid, an ointment of yellow oxide of mercury 2 gr., morph. sulp. 1 gr., vaseline 3 drachms, is to be carefully rubbed on the edge of the lids at bedtime. Sol. of atropia 1 gr. to 1 oz. with cocaine may, from time to time, be used, which will depend upon the amount of lachrymation. When the digestive system has been restored, a tonic should be given consisting of syrup of the iodide of iron. Very few ulcers of the cornea should be brought to the ophthalmic surgeon. Doubtless there are cases where the parents have neglected and the disease allowed to progress till perforation and escape of aqueous humour, in which an appropriate oper-

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ation by a surgeon accustomed to use a knife on so delicate an organ will probably save vision. But in most of the cases a careful consideration of the general aspect of the case would enable the disease to be easily recognized and progress averted. It is very essential to examine the nose in all eye affections.

Scrofulous ophthalmia is another eye affection that we meet in our daily practice. This inflammation commences with what appears like a reddish nodule on the conjunctiva and might be readily mistaken for phlyctenular conjunctivitis. Close observation will show that the red spot on the conjunctiva is not a pustule, but a glandular swelling, accompanied by little or no photophobia or lachrymation. The general type of the patient will assist us in the diagnosis of the scrofulous diathesis of the case. Like the latter it is a disease of childhood and youth. This disease requires similar treatment, proper hygienic surrounding, strict regimen, cod liver oil, and tonics. You all know that acetate of lead is a useful sedative and astringent application. You all understand that lead forms with albumen an insoluble albuminate, so that if you apply this salt to a phlyctenular keratitis, a deposit of albuminate of lead will be left upon the cornea and the remedy will be worse than the disease.

Dental.—Another cause of eye trouble is produced by dental irritation. The relations are various in their character and act upon the cornea, muscular fiber, or upon the optic nerve, the retina and the intraocular tissues. In November last my colleague, Dr. G. W. Fuller, of this city, sent to my office a boy aged 17, who was suffering from defective vision of both eyes, and excessive blepharospasm. Ophthalmoscopic examination showed central scotoma of left eye, and atrophy of the optic nerve and retinitis pigmentosa of the right. Vision of the right eye, he could with difficulty see my form, and the left 15-100. I examined his mouth and discovered that the superior cuspid tooth of the right side was absent and in the alveolar process of that region was a bony growth the size of a hazel nut, which looked like an encysted tooth. With the assistance of my friend, Dr. S. E. Knowles, D. D. S., who drilled into the mass, and finding it to be dentine, we came to the conclusion that it was connected to the lateral incisor,

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which was extracted and sure enough the bony enlargement came away with it, leaving a large cavity. The blepharospasm was very quickly relieved, the sight in the right eye slightly improved so that he could see with the right eye before he left for his home, 15-200. No doubt this was due to reflex irritation of the branches of the 5th nerve, and by other connections with the lenticular ganglion. In all eye trouble I would suggest that a careful examination of the teeth be made.

Specks, Floating Material and Opacities within the Eye.—Any and all subjective symptoms denoting ocular disturbances are naturally alarming, no matter who the individual may be. The relative import of specks floating before the eye, of opacities within the eye, may be regarded as dependent upon their nature, their situation, and their persistency. The syphilitic "dust" will generally disappear under proper medication. Certain conditions, notably gout and rheumatism, are frequently productive of opacities within the eye. They develop within the structure of the wall of the blood-vessels, a condition of friability, quite conducive to a hemorrhagic tendency. I have frequently had gentlemen, past the middle age, consult me concerning a hot feeling of the eye. The conjunctiva is red, feels hot, and pricks as if sand were in it. The attack may come on, half an hour after a meal, and may last a few hours, or a day or two. Sometimes owing to interference with the ciliary muscle, vision is slightly dim, and all attempt at accommodation painful. Its sudden appearance and rapid disappearance especially mark its arthritic nature. In young persons you will find easily tired, irritable, hyperæsthetic eyes, no doubt due to inherited gout. The majority of young oculists correct the error of refraction. Yet glasses do no good and in fact only increase the irritation.

Opacities in conjunction with either or both of these diseases often evince a disposition to resist ordinary treatment for their removal. Knowing that with such patients, the absorbing powers of the system are impaired as well as the excretory functions generally, it is frequently necessary to resort to active stimulation of the latter, in order to prepare the former for the demands made upon them. I go on the principle above stated and attack the general system and in nine cases out of ten I

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am able to relieve my patient. I demand strict attention to diet and hygiene, abstaining from tobacco and alcohol and perfect rest for the eyes. Such plan, diligently followed, leads up to happy results.

In Bright's disease the vision may be disturbed. There may be a serious loss of vision amounting almost to blindness which is unattended by any apparent changes in the eye, but which is attended by symptoms of uræmia, such as headache, vomiting, convulsive attacks, etc., no doubt due to some disturbances of the cerebral center of vision. Again, blindness may depend upon some change in the retina, a particular form of diffused retinitis. This retinitis need not and often is not attended by any uræmic symptoms, indeed in some cases it is the only first reason for any suspicion of albuminuria.

At the last session of the American Medical Association I read a paper before the Section of Ophthalmology on the relationship of atrophy of the optic nerve to locomotor ataxy. Therefore I will not enter into the close relationship of the spinal cord to the eye excepting to recite the following case: A young girl had double optic neuritis due to obstruction of the right brachial artery. The patient was attacked with paralysis of the right arm, preceded four days by an epileptic fit. There was no pulse in the right ulna or radial arteries. There was cutaneous anæsthesia of the forearm and hand, some mental confusion, headache and diplopia, but not vomiting. She was given iodide of potassium and hypodermic injection of bichloride of mercury and general improvement took place. Ferrier tells us that he found in the monkey, and presumably it is so in man, the dilator fibers of the iris contained in the cervical sympathetic are derived from the anterior roots of the second dorsal nerve. The second dorsal nerve sends a communicating branch to the brachial plexus. So that in any injury of the brachial plexus we have smallness of the pupil on the side of injury.

Uterine.—We very often find disturbances of vision due to uterine trouble. The existence of connection between disease of the eye and affections of the female genital organs will be admitted by you all. I am frequently consulted by ladies between 40 and 50 years of age with reference to defective vision, hot flashes, eyes get watery, feel as if "sticks" were in them.

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If they are in the habit of wearing glasses they complain that they no longer fit them. I always advise perfect rest to the eyes, and to wear smoked colored glasses, and general systemic remedies, which in the majority of cases restore the vision to its natural condition.

It is the tendency of modern ophthalmology to seek a local cause for all disturbances of vision, and to forget that their patients have any stomach or nervous system beyond the optic nerve, and so fail to recognize any etiological origin of disease outside of that organ, and so use local treatment exclusively. Never lose sight of the relation that the general system bears to the eye, for by such neglect on the part of the physician the best reparation in such disease cannot be expected to attend our effort, no matter how excellent the special therapy resorted to.

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OUR CHILDREN'S EYES.

By W. F. SOUTHARD, M. D., San Francisco.

If it might be permitted us to pass judgment upon the tremendous impetus which has of late years been given to all forms of physical exercise, we might well exclaim, "Behold the goddess Hygeia has returned to earth and the people have again become worshipers at her shrine"

This search for means whereby our health may be preserved and our days lengthened in the land, is being pursued with an ardor never before known. Ordinary observation will serve to show that a very large proportion of the community is giving not a little time to daily physical exercise of a varied nature for health and pleasure's sake. In this very general idea that health and happiness are very closely related, is contained a truth which is not to be ignored. Physical exercise, valuable as it certainly is, will not, of itself, suffice to keep us in the best bodily condition. Together with exercise, attention must be given to eating, drinking, sleeping and bathing. These things must be done properly; that is, in a scientific manner, according to the laws of physiology, else the organs of the body will fail to properly perform their functions.

How to keep well is a topic which, at the present time, seems to be in order to always have "on tap" when other subjects for conversation fail. At such times the hearer can scarcely have failed to note that everybody has his own particular theory on the matter. The truths of physiology are not to be received with the same consideration as is paid to stories of personal experience. Some one is very apt to give zest to the discussion by gravely informing us that the whole idea of living according to rule is "all rot." He attempts to prove this, and does so to his own satisfaction, apparently, by relating stories of the great age to which certain persons have lived notwithstanding daily violation of all the canons of health formulated by physiologists during the past fifty years. Their reasoning appears to be, that because we now and then

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know a man who has consumed whiskey and tobacco through his whole life, paying no attention whatever to his mode of living, yet has somehow managed to survive for 70, 80 or 90 years, therefore, hygienic laws have no bearing on health or longevity. We are not only apt to reply that this was an exceptional case, that extreme old age was reached in spite of himself, but to add that his descendants are liable to follow in his footsteps. The opinion is, however, quite general that we must take thought as to what and how we shall eat and drink as well as to all the laws of health, if we expect to reach the average age of man. If I should be asked to specify that portion of our body to which the greatest care had been given during the past twenty-five or thirty years, I would unhesitatingly declare that it is the teeth. In the estimation of the public (generally speaking) care of the teeth is now considered of the first importance; that in this attention lies the very foundation of health. This is demonstrated from the well-known fact that children are taken to the dentist almost with the first appearance of the teeth. We are told by the dentist—and very properly, too—that unless this care is given to the teeth from childhood up to maturity, the seeds of future disorders of the digestive apparatus are very liable to become developed, resulting possibly in very serious consequences to the individual. If, then, such disastrous results may follow neglect of the *teeth*, what shall be said concerning the consequences of habitual neglect of that more delicate and wonderful mechanism—the eye—a neglect which is especially noticeable in the case of children. It is this particular point to which I now ask, for a few minutes, your kind attention.

Through his eyes the child gains his first acquaintance with the external world; he learns the directions, size and distance of objects in space. Very early in life the mind begins to take cognizance of visual impressions. Upon his ability to correctly interpret them may depend his whole future life for success or failure. If, through any defect in his eyes, false or distorted pictures of objects are formed upon the retina, then will his notions of the external world be erroneous, his judgment unreliable, and but little dependence is to be placed upon his statements concerning events coming under his personal observation. Like unto the humming bird, as with swift motions it

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darts from flower to flower in its search for the nectar concealed within its petals, so, the restless eyes of the child, impelled by curiosity, are ever turned from object to object, while he unconsciously is receiving knowledge of the external world. There should be no cause for surprise, if the child, provided as he is, with a most marvelous organization, made to collect, transmit, assort and store up in the cells of the brain the products of the visual impressions for future reference, should misinterpret their meaning, if the likeness to the object looked upon be imperfect. We can then readily understand, I think, that children who have imperfect vision may suffer both in body and mind, and that their character may be subject to great modification. The mind, to be capable of correcting wrong visual impressions, must possess a true standard; such cannot in the nature of things pre-exist; it comes only through experience.*

At or about the fifth year, a child's perceptive powers have begun to unfold; he is gradually learning the power of attention; slowly but surely his mind is filling with a desire to know; his former uncontrolled inquisitiveness gradually gives place to asking for the meaning of things; his mental horizon expands; he originates ideas; he is beginning to think. During this period of receptivity the eyes should be capable of seeing the most accurately, as at this period of life, should there be errors of refraction, they are most easily and satisfactorily corrected. This brings us to the thought that the educator should have an equal if not greater interest in this subject than has the ophthalmologist, for the latter usually looks upon the eye as an optical apparatus, subject to errors of refraction and

*The co-ordinating nerve power which causes the two retinal images to be resolved into a single or stereoscopic image, may be greatly weakened from errors of refraction, excessive application of the eyes at the near point, or from both combined. The result may be spasmodic action of the muscles of accommodation, or loss of innervation of the ocular muscles. A person thus afflicted is unable to maintain fixation at the near point more than a few minutes before blurring of vision, watering of the eyes, or even pain supervenes. Thus it is that the power of attention becomes weakened or even lost, for, as Ribot puts it, "he who is capable of controlling his muscles is incapable of attention. It (attention) is essentially a motor mechanism; that is, it acts upon muscles and through muscles, chiefly in the form of inhibition." — *Physiology of Attention.*

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to disease. The educator is bound to take a deep interest in it in time, for he will discover how greatly the child's development and character may be influenced by the condition of his eyes.

The intellectual growth of children has of late been receiving considerable attention, especially from the psychological standpoint. May not certain unusual and peculiar phenomena noticed in some of the cases related be due to some anomaly of vision, thereby causing odd and fanciful replies to be given to many of the questions asked? Such I believe to be the case; and I also believe that previous to studying children from the psychological standpoint, we should first have the eyes examined.

It is a noticeable fact and it serves to emphasize the point, that children as a rule try to put into a concrete form their notions of things; they will even attempt to make visible to the eye that which should be left to the imagination, for example: the story of the fox, the crow and the cheese, having been told to a class of children, they were asked to give their ideas of it by making a picture illustrating the story. One of the children in drawing his picture of the fox, drew a line from the mouth down through the neck into the body. The teacher, puzzled to know what the child meant by this line, asked him for its meaning, to which he replied: "that is the cheese going down the throat of the fox." The invisible is here attempted to be made visible by reason of his own experiences with the phenomenon of swallowing. Let the child, or even the adult for that matter, be asked to draw a picture of a star, and he will invariably add radiating lines to show that it is intended to represent a star, and why? Because from his point of view stars have rays. We know that the stars are simply points of light situated at immeasurable distances from us in space, and that the appearance of rays is due to the structure of the lens found in every eye. In proof of this, look at the stars on a clear night, through a pin-hole made in a card, you will then see them as they are, points of light. The diaphragm thus made in the card-board cuts off all the rays, excepting those passing through the center of the lens, thus eliminating the circles of diffusion present, to some extent, in every eye. If wrong conceptions of form or wrong infer-

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ences may be drawn from the slight irregularity normally present in the lens of the most perfect eyes, so much the more easy is it for us to understand why children whose eyes have other and more serious impediments to the formation of true images upon the retina, should make mistaken deductions respecting every object coming within their line of vision. It would appear that no conclusion is more justified than this, that accuracy of perception and distinctness of vision are inseparable, and the first in importance.

Closely allied to the foregoing it is instructive to note the changes which may take place in the shape of the eye-ball as the growth of the body progresses. It is a well known fact that between the ages of 5 and 18 physical growth is very rapid, so rapid is it in many instances that the nervous system shows marked disturbances, all the vital forces seeming to be more than fully employed in aiding this growth. Coincident with this physiological development we find that an extra call is now made upon the child's vitality by our system of education. There are those, I am well aware, who may be inclined to doubt these statements. They feel that too much is being made of children being overworked under our school system, or that the eyes are the cause, to any considerable extent, of failure to continue school work. A prominent educator, in my presence not long since, caused no little astonishment by remarking that there was a great deal of nonsense connected with this whole business. "The work," he said, "is not too much either in quantity or quality, just enough to keep them busy and out of mischief." He believed that other causes were more potent in causing so many children to leave school at certain ages. This in view of the fact that from this very school there has been so large a number of pupils, especially girls, who have gone almost to pieces from the strain imposed upon their nervous system.

In every case which I have seen, errors of vision, marked enough to account for this loss of physical energy, neuralgias, headaches, lassitude, poor digestion, poor appetite and a tendency towards querulousness of disposition have been found. One mother said to me, "Doctor, I do not know what to do with my daughter, she is not like her real self any more. Everything seems to go wrong with her, she is peevish, easily

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nettled, especially with the younger children, and has lost all ambition." Examination of the eyes revealed a troublesome astigmatism which had been a serious handicap for her in her work for years. After correction there was complete restoration of her health. This is not an uncommon case, but typical of a large number who break down at a critical period. When such cases are so frequent, there must be something wrong. Yet what else are we to expect, when those who have the destinies of the next generation in their keeping make statements such as that given above. It is this indifference on the part of those who should be the most interested, that so discourages the reformer.

Upon this very question of the influence which the eyes have on education, a vast collection of statistics has been gathered during the past thirty years, mostly in Germany. These, together with those made in the United States, most conclusively show that, as a rule, eye troubles, dependent upon errors of refraction, begin during the very first years of school life. Let us take myopia for example. This anomaly is well known to be rapidly increasing in all portions of the civilized world, and there has been more study given to it than to any other, or perhaps all other, errors of refraction. Some of the results growing out of this study may be summed up as follows: All physiologists and ophthalmologists agree that since the time when examinations of the eyes to determine what the actual facts are were entered upon, it has been demonstrated, first, that this increase of myopia has been very marked during the past 20 or 25 years; second, that the first appearance of myopia is coincident with the child's first year in school; third, that with each year's progress in school work myopia exhibits a proportionate rate of increase; fourth, that it is primarily due to excessive and prolonged use of eyes at the near point; fifth, that it is not congenital, only in so far as all inherited tendencies may be called congenital. Moreover, on account of the tendency of the myopic eye to increase in length as myopia increases, changes take place in the inner tunics of the eye—choroid and retina—by which not only are the precipient elements—the rods and cones—displaced and separated from each other, but pathological changes are always imminent.

From the 200,000 or more examinations of children's eyes

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which have been made up to the present time the following propositions have been formulated, namely: First. Myopia is an over-development of the eye, usually beginning with the child's first use of his eyes at the near point. Second. It is found in increasing percentage rising steadily with the advancement of school-work, and found the least where the least work at the near point is required.

As year by year the requirements for use of the eyes in school-work has been growing more and more evident, the conclusion is inevitable that our modern civilization with its system of education is the real source of the defect. It has been found that the strain upon the ocular muscles (by which the eyes are drawn towards each other and sustained in that position as long as the two eyes are looking at a point within 14 to 16 inches of the eye), together with an error of refraction, make such a combination that the child's capital of coördinating nerve energy is being exhaused, resulting in too many cases in a variety of nervous phenomena. To the unthinking these phenomena are assigned to almost any cause but the eyes, yet, examination of these children who break down during school-work, who collapse, as it were, at the close of some examination, show that they are victims of nature's effort to produce results with eyes not suitably adjusted to the work which they are attempting to perform. From 12 to 14 years in the cases of girls is a very critical age, and it is then they so frequently exhibit the first symptoms of eye-strain, though the immediate effects are not directly traced to the eyes.

Examination of the enormous volume of statistics bearing on the development of myopia also shows that in the oldest centers of civilization are to be found the highest type of myopic development. Take, for example, Germany, as perhaps the oldest community where the system of education has been the most carefully and scientifically studied, myopia ranges from only about 1 per cent in the lower departments up to 70 or 80 per cent in some of the higher and special institutions of learning. As further confirmation we are shown this fact that as we leave these old centers of education myopia is found to exist to a very much less degree. We find in California, for example (a comparatively new center of civilization), that myopia exists in but a small percentage of the school popula-

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tion. Among 311 Freshmen of the University at Berkeley, I found but a little over 7 per cent with uncomplicated myopia; this is scarcely higher than is found in some of the lower schools in Germany. Later examinations show that this percentage is now too low; it is gradually rising.

We have seen that children are not born myopic, but that this tendency is inherited in a vast proportion of the cases. Children of myopic parents become myopic much more quickly than do children born of parents having normal or approximately normal eyes. That which is overwork for the one child may be only play for the second. Children with strong hereditary tendency frequently exhibit a characteristic appearance of the face and eyes. In our far western country we see less of hereditary myopia than is seen in the East and in Europe. Our children commence as a rule with better eyesight than do the children of older civilizations. The great majority of fathers and mothers of our California children are people who came to this country to carve out for themselves fortunes and homes by the strength of their muscles and the sharpness of their wits. Not being forced to overtax their eyes, their descendants have been able to commence life with less tendency to development of myopia. In some of the older centers of civilization the children are the descendants of myopes, students and workers at the near points, through several generations.

We therefore conclude that the higher our civilization, as we measure civilization to-day, the higher will be the percentage of myopia. The outlook for the future of our race rightly fills us with alarm, unless the proper course is taken to alter present conditions. Did time permit, we could dwell with profit on this phase of our subject; for the present we must rest with simply blazing a path for others to follow and complete the work so evidently necessary to be done. The mechanical methods of teaching, in contra-distinction to natural methods for arousing the best that is in a child, is a subject filled with meat.

If myopia were the only condition giving us concern, that alone would be a sufficient reason for the interest we should have in this subject of our children's eyes; but we find that there are other refractive disturbances besides myopia, such as

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hyperopia and astigmatism. Since we have discovered that all children born into the world are hyperopic, and a large proportion astigmatic as well, we have an added reason for believing that compulsory examination of the eyes would prove of enormous benefit. This class of cases are obliged to exert a greater or lesser power of their accommodation from the time they open their eyes in the morning until they close them in sleep at night. This constant strain upon the muscle of accommodation and convergence very frequently is the immediate cause of such disturbances of the nervous system, as headaches, asthenopia, sleeplessness, twitching of the facial muscles, etc.

In other papers I have dwelt at some length upon these several points. I mention them here simply for the purpose of emphasizing my proposition, namely: the necessity for constant supervision of our children's eyes. Those cases which have unequal curvatures of the cornea, the astigmatics, are very numerous and subject to very troublesome nervous affections. Unless this asymetry of the cornea be due to injuries of the cornea, ulcers, burns or to operations, it is congenital. It may be, usually is, in fact, combined with hyperopia or myopia. More scientific and accurate means for measuring curvature have served to disclose the fact that eyes with astigmatism are more common than eyes without it. It is the most frequent cause for a certain form of headache. The attempt of the muscles to overcome this defect by acting with unequal tension may be the direct cause for these peculiar symptoms. That astigmatism has been overcome temporarily by some such force, is plainly evident to my mind. The young child, in his automatic attempts to bring about visual acuteness when this or any error of refraction is present, is drawing on his nervous system at a fearful rate, for his surplus energy is being consumed.

Is it any wonder that those who are impressed with this subject ask the question: "Is an education gotten at such a cost to health and comfort really worth the outlay?" When it is considered that at least 90 per cent of all this terrible loss of vital energy is absolutely needless, the great wrong to the individual, and to society, by reason of this neglect, will be appreciated. Do you imagine that the thin, pale, listless boy

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or girl who comes home from school every afternoon complaining of tired feelings, headache, fretfulness and a host of other disturbances so familiar to you all, is the better for his hours spent in school? Yet he may be a sufferer from some eye defect, which when corrected may again place him on a par with his vigorous playmate, and a new life open up to him.

That child, whom you met on the street to-day with eyes seeming to be looking into each other, has strabismus; probably because he has some error of refraction which has prevented him from mentally combining the two images into one, and he is forced to put aside one as being a disturbing factor. Many of these cases are susceptible of cure if taken in proper season, without the necessity of an operation. The parents of many of these cross-eyed children object to having an operation done on the score that their child sees well enough. They have not learned that one eye is doing the work; if they had done so they would have very quickly accepted any remedy which promised a cure.

Those parents who insist upon having their children's teeth cared for by the dentist, and who carefully follow out every instruction given them, will on the other hand obstinately refrain from having the eyes examined for fear, forsooth, that the oculist will put glasses upon their child, which they will thereafter always have to wear. They fail to realize that an examination of the eyes is something more than simply to put glasses before the eye and ask the person to name letters 20 feet away. Objective examinations are now of the greatest importance, for it is only by this method that we discover the real state of the refraction. Muscular innervation is of frequent occurrence with a very low state of refraction. Patients thus afflicted are very liable to be great sufferers from their inability to coördinate retinal images excepting under excessive strain. The individual's surroundings, his work, his hours of work, the state of each eye separately and together, are of vital importance in rightly judging the condition and treatment of the patient before us. In the light of the enormous mass of statistics which has been so laboriously collected on this subject of children's eyes during the last thirty years, we freely confess that if they are to serve no higher purpose than to afford interesting studies for the scientist, then indeed has this work been

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in vain. We hope, however, for better things. We believe that it is not, at present, so necessary to add to this bulk of material as it is to make an intelligent and practical application of the lessons therein taught.

It would be well for physicians, educators and parents to recognize the fact of the eye's limitations; and that capacity for work, especially at the near point, must be gauged by other standards than mere acuteness of vision. The power of attention in children depends entirely upon their eyes. To properly develop this somewhat complex phenomena, *attention*, by which the child's mind is caused to unfold and reveal its hidden possibilities, our most serious thought should be given.

Are we asking for too much, when we say that a child should bring with him, when first sent to school, a certificate showing the condition of his eyes? The teacher will then possess invaluable information of the child's ability to work. With all its imperfections, the eye, it must be granted, is the most wonderful of all optical instruments for quickness and ease of adjustment for all distances; for its wonderful motility and its wide visual field. In a word, "the adaptation of the eye to its functions is therefore most complete."—(Helmholtz.) Ought we not then to value the eye as a jewel most precious and beyond all price? It is to be hoped that future generations will not censure us for stupidity in having failed to recognize our duty; on the contrary, let us hope rather, that praise will be given us for the thoughtful care given to them when in their years of helplessness.

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ACOUSTIC PHYSIOLOGY.—THE FUNCTION OF THE TENSOR TYMPANI AND STAPEDIUS MUSCLES IS TO IMITATE AND TO AMPLIFY SOUND.

By THOS. F. RUMBOLD, M. D., San Francisco.

The function of these two small muscles has been under discussion by well known acoustic physiologists for a number of years,—twenty-five years to my knowledge. During this time the theories of investigators have been greatly at variance.

Views of Others Concerning the Function of the Stapedius and Tensor Tympani.—From Landois and Stirling, in their work on Physiology (1892), page 1017, I quote the following: Lucae "Regards the stapedius as an antagonist of the tensor tympani." Politzer says, "That the pressure within the labyrinth fell when he stimulated the muscle." Toynbee says, "The stapedius acts as a lever and moves the stapes slightly out of the fenestra ovalis." "Henle supposes that the stapedius is more concerned in *fixing* than in *moving* the stapes, so as to prevent too great movement." Landois and Stirling, page 1016, say, "When the muscle (tensor tympani) contracts in the direction of the arrow (pointing in the direction of the promontory), then the handle of the malleus pulls the membrana tympani inward and tightens it. This also causes a movement of the incus and stapes, which must be pressed more deeply in the fenestra ovalis, as already described."

My examinations of the living ear agree with these physiologists. I have made three successful sections of the ear on living animals, operating on one dog and two cats—sections that were very difficult to make—and applied a very light faradic current to the tensor tympani. Each time the electricity was applied—forty or fifty times on each animal—the tensor contracted strongly, the membrana tympani was strongly indrawn and the stapes was plainly driven into the fenestra ovalis. It required no magnifying glass to perceive the motion,

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but the glass made this motion more manifest. Another important fact was demonstrated, the *tendon* of the stapedius was *shortened* at every *contraction* of the tensor tympani. When the manubrium was strongly pressed inward, the stapes always passed inward into the fenestra ovalis, shortening the distance between the attachment of the stapedius and the pyramid. As I am certain that my experiments are absolutely correct, I shall discuss this subject holding that these facts can be substantiated by any one taking the pains to make the sections.

The Function of an Organ best Studied During Life.—The study of the anatomy of the ear to ascertain the function of the middle-ear muscles is only partially satisfactory. It is only during life that the search for these functions can be demonstrated. This I accidentally found to be so while studying the mechanism of tinnitus aurium.

Employing Tinnitus Aurium to Demonstrate the Functions of the Middle Ear Muscles.—In order to be able to present my views distinctly, I shall be compelled to refer, at some length, to the *pathological conditions* that cause the ear-sounds in tinnitus aurium, for it was the fact that one peculiar kind of ear-sound was maintained without variance, except as to severity, for many years, that led me to a conclusion as to the function of the middle-ear muscles. It is evident, therefore, the causes of ear-sounds must be plainly demonstrated, that is, their mechanism must be fully described. In doing this the function of the middle-ear muscles is demonstrated.

The Supposed Causes of Ear-Sounds.—If works on otology are examined on the subject of the mechanism of ear-sounds, evidence of a variance of views is frequently found. In my opinion the reason for this variance is the absence of pathological appearances in some very marked cases of tinnitus aurium, as the following quotation from Dalby, page 182, will show. After having described the disease of the semi-circular canals, ecchymosis in the vestibule, hyperæmia of the cochlea, general enlargement and fullness of the vessels of the labyrinth, he says: "All these changes would point to distinct pressure within the labyrinth. [Making pressure the cause of the sound.] On the other hand, however, a case was related to me in the General Hospital at Vienna in which a man, re-

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siding at Trieste, had suffered for many years from tinnitus of so distressing a character that his life was rendered perfectly wretched. All the best aural surgeons in Germany had been consulted by him without any benefit. According to a request made in his will his ears were examined after death, and a most careful dissection was made of the temporal bones. No abnormal appearance of any kind was detected. * * * We certainly are not in a position to give a satisfactory explanation of this symptom except in a certain number of cases."

During the spring of 1873, while preparing a private course of lectures for physicians on inflammatory diseases of the nose, throat and ears, I was greatly perplexed when I began to write of the cause of tinnitus aurium, to find a cause that could fit all cases. At first I included the closure of the Eustachian tubes, myringitis, inflammation of the middle-ear and mastoid cells, gastric, hemorrhoidal, uterine and urethral troubles, etc., for all of these ailments apparently induce tinnitus. I soon saw that I might as well say that the man who made the matches set the house on fire, or even blame the man who cut the wood for the match man. Then I called these ailments predisposing causes, and considered that they had an aggravating influence upon the labyrinthine inflammation, the real cause of the ear-sound as I then supposed.

A more extended study into the histories of a large number of ear cases lead me to abandon the idea of inflammation of the labyrinth and call the cause of the ear-sounds a pressure upon the labyrinth through the stapes. The pressure idea was soon abandoned also, and the theory of hyperæsthesia of the auditory nerve or other contents of the labyrinth was the next conclusion.

The hyperæsthesia idea was not held more than three or four months, as I found that I was taking it for granted that tinnitus aurium was as inherent to a diseased ear as pus was to an abscess cavity. Besides this, I was presuming that sound was produced in the subject's ear by a different mode than it was produced outside of the ear. As extrinsic sounds are the result of vibrations, the intrinsic sounds must also have vibrations for their production, but how these vibrations were brought about I could not conceive.

I was then compelled to assume that the ear-sounds were a

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hallucination; in fact I was forced to say either that they were hallucinations, or that they were sounds, and as I saw no opportunity to make sound in the ear by vibrations, it was natural to say that they must be hallucinations. I taught this to one of my classes. I had not at this time made careful dissections of the internal ear.

All this time I had been engaged for about five years in a thorough investigation of the functions of the Eustachian tube, and had noticed that in patulency of this canal, the patient's voice was transmitted to the ear through this passage. In two instances the peculiar tone of the voice started a tinnitus which lasted for several hours. In one patient every eructation from the stomach, that passed up the open Eustachian tube, started a very disagreeable tinnitus that lasted sometimes all day; this condition continued for about three months. These incidents severely disturbed my hallucination theory, and set me to reflecting. I then recollected that I had, for a number of years, employed various methods that frequently alleviated or cured the tinnitus, such as the inflation of the middle-ear; applications of a mild medicament by spray producers to the nasal and pharyngo-nasal cavities; the application of warm vaseline to the surface of the body; the inhalation of nitrate of amyl; the application of the constant and faradic currents of electricity; the employment of other noises applied to the ear by means of a speaking tube, etc., none of which could so suddenly produce a curative effect upon a mental disease—a hallucination being a mental ailment.

Is the Sensation Experienced in the Ear a Sound?—It is important to settle this question at once. In every work on ear diseases in my possession, it is easy to see that the authors think that in certain cases the causes of these abnormal sounds are evident upon dissection, and in certain other cases, one author says: "We must be content to admit our ignorance of the cause," and no attempt at any explanation is made. This is due to the fact that there is no evidence of the cause seen after death. In the nature of the case, the cause of one kind of ear-sound *could not* be seen by the most careful post mortem examination. In this kind of cases the authors are apt to call it a disease of the imagination, or a hallucination.

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It is seen that one kind of ear-sound has a *truly objective existence*. This seems to be substantiated by dissections, as already mentioned, showing an abnormal condition of the blood-vessels in or near the internal ear. In twelve ears carefully examined, belonging to subjects who were over fifty years of age, four had distinct irregular enlargements of these blood-vessels; the vestibular artery and vein were the ones most frequently irregularly enlarged. Other vessels may have been enlarged, but as they are quite difficult to expose, they were not seen. The irregularity of their caliber was so marked that I am pretty sure that the subjects, when alive, were afflicted with a hissing or rushing noise in the ears. Blood could not flow through them without producing vibrations, and these exceedingly rapid and fine motions would be transmitted to the auditory nerve, and experienced as sound of a uniform character, varying with the intensity of the blood-flow. Nothing can be done to change the character of this sound, as the caliber of the blood-vessels is more or less permanent.

What is Sound?—Before proceeding farther, this question also will have to be clearly answered. If we had no other kind of ear-sound than the one just described, a definition of sound would not be required here, but as there is another kind of ear-sound that is not as easily explained, generalities as to sound must be excluded.

Sound, formed in the ear or on the outside of it, is vibration of some kind of a body which immediately affects the ear. To perceive sound, whether formed within the ear or on the outside of it, there must be motion, and this motion must be transmitted to the liquid in the internal ear so as to affect the auditory nerve; in other words, we perceive sound only because of the transmission of motion to the auditory nerve. "In tinnitus aurium we have a sound that is not produced by sound-waves in the air, yet this sound must, and can only, be produced by motion imparted to the liquid in the internal ear." *

* Extract from remarks made before the St. Louis Medical Society, October, 1873, and published in the author's work on "Hygiene and Treatment of the Diseases of the Nose, Throat and Ears," 1881, pages 348 and 349.

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Can we Perceive Sound Without Motion?—If we keep in mind that there *must* be motion to produce sound, it is plainly seen that since closure of the Eustachian tube cannot produce motion, it cannot produce sound; nor can inflammation of the middle ear or mastoid cells produce motion; therefore, these conditions cannot produce sound. The same may be said of labyrinthine inflammation, or pressure of the stapes; these cannot produce motion, therefore, they cannot produce sound.

Two Kinds of Ear-sounds.—If ear-sounds are carefully analyzed it will be observed that there are two very different kinds. They differ in the character of the sound, in their etiology, in the location of origin, and in their mechanism. One kind is of vascular origin, which I have named, "Vascular Tinnitus Aurium," and the other kind of muscular origin, which I have named, "Muscular Tinnitus Aurium."

The Vascular Tinnitus Aurium, says Jas. Hinton, in 1868, "Is obviously referable to vascular conditions as its exciting cause." Again he says, "But in estimating the cause of tinnitus it appears to me that the great frequency with which enlargement and fullness of the blood-vessels of the labyrinth are found on dissection to accompany even slight inflammatory affections of the middle-ear should not be overlooked." Dr. Jas. Jago, 1867, ascribes the sound, "to partial compression of the small arteries." These two men have found the cause of one kind of ear-sound, that is certain.

The Muscular Tinnitus Aurium is known by a sound almost always resembling some familiar sound heard in the neighborhood of where the sufferer lived at the time when he acquired his ear-sound, or, as Dalby says, "the nature of the noise is described by patients as resembling recognizable sounds of all sorts." On the 4th day of October, 1873, I stated in the St. Louis Medical Society that I believed that the sound in the ear was caused by a paralysis agitans of one or both muscles in the middle-ear; their alternate contractions and relaxations being the cause thereof. On that evening Dr. J. P. Bryson read a paper on "Tinnitus Aurium," giving his views as to its cause, which he believed to be a partial paralysis of the auditory nerve. During the discussion I stated that I had been studying my notes on this subject for several months, and had come to the above conclusion.

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Attention is directed to the uniformity with which these recognizable, familiar, varying sounds, such as the noise of a street car cable, etc., are reproduced in the victim's ear. It tends to show a marked relationship between the extrinsic sounds and tinnitus; almost as close to each other as cause and effect. The fact that there is a uniformity in the positive statements from so great a number of persons, natives of all countries, North America, South America, Great Britain, Europe, Norway, Russia, Japan, China, Australia, Sandwich Islands and New Zealand, that these ear disturbances resemble familiar sounds heard only in their native countries, shows that it cannot depend upon their "fancy" nor "their graphic power of explanation," as the brilliant Wilde says, but undoubtedly does depend to some extent "upon their rank in life" and "the position in which they are most familiar." Wilde's own description indicates this when he says they "draw their similitudes from objects and noises by which they have been surrounded."

I propose to show that these ear-patients who lived in different portions of the earth, when their ears became affected, could *not* have any other kind of sounds in their ears save the familiar sound that each heard at the time he contracted his muscular tinnitus. Of course they have the "hissing" or "rushing" sounds also, that is vascular tinnitus, provided they had blood-vessels in the labyrinth whose caliber was made irregular by inflammation.

The differentiation of these ear-sounds is not so difficult as would appear at first thought. A noise of almost any kind will produce a marked amelioration of muscular tinnitus aurium; but will produce no ameliorating effect on vascular tinnitus aurium. Persons afflicted with muscular tinnitus always hear very well in a moving street car or railroad car, while those afflicted with the vascular variety will not hear nearly so well in the cars. The reason is evident: No kind of sound or noise applied to the ear could control the circulation of the blood in the irregularly calibered vessels, which is the cause of the vascular tinnitus; but noise applied to the ear will have a marked effect on the membrana tympani and the stapes, and through them on the tensor tympani and sta-

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pedius muscles, the abnormal condition of which is the cause of the muscular tinnitus aurium.

The Sounds that are of Vascular Origin are Hissing and Rushing in Character.—From what Mr. Hinton described in 1868, and Dr. Jago, in 1867, it is evident that this must be the character of the sound that the vascular variety must emit. No one can make a dissection of a diseased internal ear without seeing the excessive irregularity of the caliber of some of the blood-vessels. If one will grasp a hose through which the water is flowing, he will both feel and hear the thrill that the flowing water makes in its passing through the pinched portion of the tube, and the tighter the grasp—save only that the water is not stopped entirely—the greater the commotion of the water in its passage. This is a partial illustration of the mechanism of vascular tinnitus aurium; in the case of the blood-vessel, its caliber is enlarged instead of being contracted, the enlargement being the cause of the motion, which is experienced in the ear-sound.

Almost Every Ear-Sound that is of Muscular Origin Resembles Such Outside Sounds as are very frequently heard by the sufferer. The ear-sound is impressed upon his ear at a time when the middle-ear muscles were in a more or less abnormal condition.

In the investigation as to the time when the muscular tinnitus aurium was first noticed, it will be well to take into consideration the location of the patient when he first experienced this kind of ear-sound. It will be almost universally observed that those living in one location, as in a city, will complain of being troubled with a kind of sound that is peculiar to that locality, and which differs from sounds produced in other locations of the same city, while those who live in a country location will complain of ear-sounds that are peculiar to that locality. This indicates that there is a very close relationship between the kind of sounds the patients hear in the ear, and the sounds produced in different locations in which they lived, and it shows that the sounds heard in these localities have something to do in helping to produce similar sounds of the ear.

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A Japanese Cannot Have an Irish "Tea-Kettle" Sound in His Ear.—Wilde says that the old women of his country "much given to tea-drinking, sum up the category of their ailments by saying that 'all the tea-kettles in Ireland are boiling in their ears.'" No one in this country will contract this kind of ear-sound, unless he has heard it. I have a Japanese patient who acquired a tinnitus, before he came to America, that resembes the sound of a Japanese instrument, which emits a tone unlike anything in this country. This man *could not* have an Irish "tea-kettle" sound in his ear for the simple reason that his ear never heard such a rattle, nor could his ear *originate* such a noise. I have a Chinese patient who has an ear-sound that resembles the bells of one of the largest joss-houses in his country. His ear took on this tinnitus while he was in China. This man's ear could not have a steam printing-press sound, because there are no such compound noises in his country. This is a point that should be noticed particularly.

From what I have learned from a large number of patients I am certain that the sounds in their ears dated from a period at which they heard something that *produced a similar sound*—that produced a similar vibratory motion of the membrana tympani. Thus it is observed that each of these patients was afflicted with *only* such ear-noises as he had heard in his neighborhood.

I have never had a patient, who was afflicted with this kind of tinnitus, say that he had a noise in his ears unlike any sound he had ever heard. Very frequently, as already stated, there may be two or more sounds in the ear at the same time; that is, there may be a hissing or rushing sound—if such a tinnitus be present—occasioned by vessel vibration within the labyrinth or in its neighborhood, while each of the others will be a familiar sound and one that he has heard while contracting this kind of tinnitus aurium. I feel sure that it can never be established that a person who had not heard the propeller of an ocean vessel had a tinnitus resembling a propeller sound, or a person who had not heard a planing mill had a noise in his ear resembling that peculiar sound.

The Pathological Condition that Causes Paralysis Agitans of the Muscles of the Middle Ear.—Dr. T. Lauder Brunton, of

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London, in an article in "Brain," July, 1878, on "Reflex Action as a Cause of Disease," says: "I have just mentioned one instance in which intermittent spasms (paralysis agitans) of a voluntary muscle, the orbicularis palpebrarum, was caused by irritation of the sensory nerve. This leads me to remark that a very important condition to be borne in mind is that constant stimulation of a sensory nerve will often produce clonic (or intermittent), and not tonic (or continuous), contractions of the muscles which it may set in motion."

The contractions and relaxations that constitute a paralysis agitans of the orbicularis palpebrarum are very similar to the motion of the muscle or muscles in the middle ear, both being caused by the same kind of diseased action, namely: irritation of a sensory nerve, the facial. The paralysis agitans of the orbicularis muscle is exactly similar to the paralysis agitans of the middle-ear muscles when these latter muscles are making uniform contractions, thus forming uniform sounds, (such as a ringing or singing or purring sound), which not unfrequently start in the ear and last for a few seconds. When, however, the *familiar* sounds are made, such as the sounds of birds, crickets, etc., the motions of the middle-ear muscles differ, markedly, from that of the eye-muscle, yet both are caused by the same kind of disease of the facial nerve. In the case of the ear, the function of the ear-muscles interferes and produces a difference in the tune. In this instance the middle-ear muscles must undergo irregular contractions so as to form a peculiar sound, a sound unlike any other sound, and is produced by contractions that are unlike any other sets of contractions. The ability of these muscles to form familiar sounds belongs to their function,—that of imitation, as will be mentioned.

The Apparent Intelligent Act of the Ear-Muscles.—Some one may say: It is altogether possible that a paralysis agitans can affect the muscles of the middle-ear; but this condition can only cause a simple succession of contractions and relaxations, which would only make a uniform sound, the contractions and relaxations being uniform, there being nothing to make them otherwise; but to give these diseased ear-muscles an apparent intelligence of following and repeating, for several years, a peculiar rotation of contraction and relaxation so as as to form a special sound, is past belief.

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In answer to this objection I will say: There are actions of medicines and reactions on various parts of the human system that are past belief, were we not overwhelmed with the great number of facts that say plainly that things are so, although we cannot comprehend their mode of action. Why rhubarb should act more especially upon the upper bowels, or aloes have a like effect upon the lower bowels, we don't know; or why ipecac should have a different effect than that of quinine, we don't know; but the facts relating to their peculiar action are so numerous that we admit them simply because of their number.

If we had one ear patient in a hundred, or fifty, or even thirty, who said that he had had peculiar familiar sounds in his ear for the past year or so, then it is altogether likely that we would call it fancy on his part, because we could not conceive how such a repetition of apparently intelligent acts could be performed by the ear muscles; but when we hear almost every one of these patients—come from part of the world he may—say that he has these familiar sounds in his ears, and that they resemble exactly the outside sounds that were made in the neighborhood where he resided, then we are overwhelmed with the great number of statements concerning these facts and are compelled to admit the correctness of the assertions, and *especially* so when a certain method of treatment that relieves the patient, proves that his assertions are founded upon facts. We then must surrender our unbelief.

Paralysis Affecting the Action of the Middle Ear Muscles.—If the tensor tympani and the stapedius muscles were affected with paralysis agitans, would they produce a sound? Could there be a movement of the stapes without producing sound? Could there be a movement of the tensor tympani without producing sound with every contraction? All must agree that action of these muscles would produce sound.

In the normal ear, as soon as the sound-waves cease their blows upon the membrana tympani, the stimulation of these two ear muscles to imitate and amplify sounds ceases also; but in a diseased state, this abnormal condition constitutes their stimulus, so they continue their contractions and relaxations, that is, continue to imitate these sounds that come nearest to

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their hyperæsthetic condition, this imitation being the tinnitus aurium of the middle ear.

If the hyperæsthetic condition is such that no outside sounds are exactly suitable for continuous repetition, then the ear muscles may take on simple contractions and relaxations of a uniform character, thus making a uniform sound such as ringing, or singing, or purring—the latter sound would resemble the sound that the contraction of the orbicularis palpebrarum would make—or they may even imitate the sound produced by the vascular tinnitus aurium, thus forming a hissing or rushing sound. In these cases there will be momentary increase of the sound from the heart's action, as is always the case in a vascular tinnitus, if an artery is the affected vessel.

The Direction of the Contractions of the Tensor Tympani and the Stapedius is exactly in the same direction as that taken by the manubrium and stapes when they are pushed inward by sound-waves. I ask, what is the purpose of the contractions of these muscles? Are they to *resist* the action of the sound-waves, or are they to *assist* the action of the sound-waves? The muscles are placed here to produce motion, and their action—be it noticed—is *not* to check the motion of the manubrium or stapes when affected by sound-waves; but quite the opposite, they *assist* the sound-waves to increase the *inward* motion of these two bones. I ask particular attention to these facts. The contraction of the tensor tympani increases the inward motion of the membrana tympani, and the contraction of the stapedius forces the base of the stapes into the internal ear, plainly showing that their action is in the direction of the sound-waves. Also showing that *if they move at all* they must increase the inward motion made by the sound-waves, which they would have to do if they amplify sound.

Clinical facts prove that muscular tinnitus aurium is maintained in the ear for many years, that is, the ear muscles repeat familiar sounds for many years.

"A patient of mine, at a time when he had a bad cold in his head, had occasion to visit the office of a friend (in 1874), whose fireplace was closed by a piece of paper being pasted over the opening. A short portion of the paper was loose, so that the draught in the chimney caused its vibration. The sound thus

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made was reproduced in my patient's ear." * This fluttering sound did not leave him for nearly six months. I had another patient that retained "the noise made by Jones' old-fashioned water mill in his left ear for over thirty years." He had the same "yow, yow, yow," sound when I last saw him, its intensity varying in severity according to the state of the weather. "I have had several engineers of railroad locomotives who had muscular tinnitus aurium, which lasted for several years. The noise in each case resembled noises which come from their engines." **

There are many other varieties of this tinnitus, such as the noise of the wind blowing through the ship's rigging, the buzzing sound of a planing mill, the sound of an elevator in a hotel, the vibrations of the steamboat's paddles, the pattering of rain on a shingle roof, the rumbling of railroad car wheels, the working of a steam printing press, the noise of a sewing machine, the chirp of a cricket, the noise of a locust, the bark of a sea lion, the lowing of a Mexican ox, etc. In each of these cases the sound had continued from one to ten years.

The continuance of these outside sounds for so many years proves that the function of the middle-ear muscles is to imitate sound. This seems all the more likely when we take into consideration the relation of these muscles to the motions made by their contraction and the motions of the membrana tympani and stapes when they are transmitting sounds to the internal ear, the sound-wave motions being imitated and amplified by the muscular motions.

Other Imitators.—Not only are human beings imitative as far as the formation of sounds are concerned, but the nerves and muscles of other portions of the body besides the ear are also imitative. If a child in a school-room has an epileptic spasm and there is another child in the same room whose system has been prepared by disease, so that he is liable or predisposed to epileptic spasms, the sight of the first child in spasms will be very liable to induce a like condition in the second child, and he will have the same kind of spasms. This has been observed many times.

*Author's work on the "Hygiene and Treatment of the Diseases of the Nose, Throat and Ears," 1881, pp. 349 to 351.

**Author's work on the "Treatment of Catarrhal Diseases of the Nose, Throat and Ears," 1888, pp. 552, 553.

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If we go into a room where there is a piano, and make a sound similar to that which one of its strings can make, the sound that we produce will be reproduced on that string, because the length of the sound-waves in both cases is precisely alike. This is exactly what happens in the ear, and we call it sound. In the person afflicted with muscular tinnitus, the muscles connected with the ossicula being in a diseased condition—caused by a chronic inflammation in the middle-ear, and ready to take on a paralysis agitans—continue the motions received from any accidental sound that exactly suits their hyperæsthetic condition. If these contractions and relaxations continue after the accidental sound ceases, then these motions constitute the paralysis agitans, or in other words the tinnitus aurium of the middle ear.

A Preparation Required.—Of course the ear-muscles must be made ready by disease for the paralysis agitans before the accidental sound starts them, just as the G string of the piano must be ready to begin its vibrations from the accidental G sound; but if the G string is not ready the accidental G sound will not start it, nor would the ossicular muscles have continued the mill-gate sound in the ear of the patient above mentioned, had not the hyperæsthesia made the muscles ready to continue contractions that were exactly similar to the noise of the water leaving the mill-gate.

A Start Required.—Thus it would seem that "Old Jones' mill-gate" made the sound-waves that started the contractions of the ear-muscles, and these muscles, being in a diseased condition, continued to make the same kind of motions, producing identically the same kind of sound in the man's ear ever since.

These facts prove: First, that the ear-muscles imitated the sounds formed by the mill-gate; and second, that they continued this kind of imitation for many years. It is not possible to have these familiar sounds repeated in the ear unless the middle ear-muscles imitated the extrinsic sounds and continued to repeat them for years. It follows, as a necessary consequence, that if tinnitus aurium is an intrinsic sound, the ear-muscles must have imitated the extrinsic sound; there is no avoiding this conclusion.

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A Diseased Condition of the Ear Not the Cause of the Imitation of Sound.—The ear-muscles could not have acquired the function of imitation because of their diseased condition; this condition causes them to contract and relax, but not to imitate sounds. It is consistent with the facts observed in *every one* of these cases to say that the ability to imitate sound is inherent, and that the diseased condition—the hyperæsthesia—sufficiently irritated them to cause them to continue this inherent ability, *i. e.*, reproducing the identical sound.

Can the Ear-muscles Initiate Sound?—The question may be asked, could the patient with the mill-gate sound have had this kind of tinnitus had he not heard the sound of the water leaving the mill-gate? If it were possible for the muscles of his ear to voluntarily initiate, that is, to start contractions without assistance from some outside sounds that exactly resemble this kind of sound, then they could initiate sound; but if these muscles cannot initiate this or any other kind of sound (all agree they cannot, and it would be a great calamity if they could), then he could not have this kind of sound in his ear, unless started by the mill-gate. The truth is, his ear-muscles could as easily initiate the sound of an ocean propeller or a Samoan wooden musical instrument, as initiate the mill-gate sound. It seems to me that this demonstrated that it was necessary for the water to start the sound, and the ear-muscles to continue to imitate it, proving my propositions correct, namely, that the sound from the mill-gate and his mill-gate tinnitus had a positive relationship the one with the other; and that it is a faculty of the middle ear-muscles to imitate sound.

I had a patient, a girl aged 15 years, quite deaf, that acquired a muscular tinnitus while I was examining her ear with a tuning-fork. On its application to her ear, she complained that the fork gave her ear a "ringing sound." This sound remained in her ear constantly for nearly two months. She was certain that she did not have any kind of sound in her ear before I placed the fork to her head. I came very near losing my patient because she acquired this sound in her ear; and if her hearing had not very materially improved, she would have left me. The sound of this fork exactly suited the hyperæsthetic condition of her ear-muscles, and they continued to imi-

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tate the sound for nearly two months. I am convinced, from past experience, that if I had not placed the tuning-fork to her ear, she would not have had a tinnitus of any kind, certainly not of that kind. No sounds made within her hearing but that of the tuning-fork exactly suited the pathological condition of her ear, and her ear could not initiate that kind of sound; it had to be started by the tuning-fork. Her ear might have started a sound that could be produced by a repetition of rapid contractions and relaxations, similar to the contractions of the orbicularis palpabrarum, producing a uniform sound, but not a sound that exactly resembled a tuning-fork.

The Function of the Middle Ear-muscles.—It has been been my opinion for many years—although only partially expressed in my writings because of a fear that I might be wrong—formed from close observations upon notes taken upon *several hundred* marked cases of tinnitus aurium of the middle ear, that the only function of the tensor tympani and stapedius muscles is to imitate and to amplify motions that are given to the membrana tympani and stapes by the sound-waves; that is, the function of these middle ear-muscles is to increase the motions of the small bones of the middle ear; of course when they do so they must imitate the motions made by the sound-waves, the muscles being stimulated to this action by the motions given to the membrana tympani by the extrinsic-sound impulses. Of course the amplification is entirely under the control of the mind.

An Everyday Experience Proves that these Muscles Amplify Sound.—There are many times when noises are being made around us that, if heard with the utmost distinctness, would distract our mind from a certain train of thought, or would prevent us from hearing a certain particular kind of sound. For instance, while intently reading an interesting book we do not hear with the utmost distinctness, even comparatively loud noises, as the roll of a carriage, the striking of a clock, the step of a person in the same room, and almost numberless other lesser sounds; or when at an opera no noises are plainly heard, except the musical sounds, unless they are overpowering. But when these distracting noises are louder than the musical sounds, amplified by the ear-muscles, we are annoyed because we are compelled to take cognizance of the distracting

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noises to the exclusion of the musical sounds that the ear-muscles have *vainly endeavored to maintain* the most prominent. Those who are listening to my voice do not hear other sounds around them nearly as plainly as they hear me; but if they turn their attention to those other sounds around them, they will hear them much more distinctly than before, and will hear my voice much less distinctly than when listening to me. At all times the action of these two muscles, in normal ears, prevents confusion, not by excluding certain sounds, for we do indistinctly hear them, but by amplifying the selected sounds we desire to hear, leaving the other sounds, that we do not desire to hear, unamplified. The reason we weary of listening is because the middle ear-muscles tire in imitating and amplifying sounds. Without these *selections*, imitations and amplifications, all sounds would be heard equally well, to our great confusion.

I have the histories of quite a number of patients—more or less deaf—who are thus disabled because their middle ear-muscles cannot select and amplify those special sounds that they desire most to hear. While conversing in a room with one person, they hear but with little difficulty, but when they are in a room full of people, many of whom are conversing and laughing, they cannot understand what is said to them, unless addressed in a very loud tone, so loud that it is painful to their ears. Such persons are apt to say: "Don't speak so loud, but speak more distinctly." They are mistaken; indistinctness is not the trouble, it is the sound-amplifying muscles of their ears that are at fault. I have proved this in almost numberless instances. All persons who have had the malleus and stapes removed belong in this class of deaf persons; their sound-amplifying muscles have been disabled or removed, and it is a physical impossibility for them to amplify desired sounds; they hear all sounds alike and never will be able to hear well on the street, in a crowded room, or in a moving car; just the opposite of the conditions of persons afflicted with muscular tinnitus aurium.

It seems to me that all these facts plainly indicate that the function of the middle ear-muscles is to imitate and to amplify sound if the person so desires,—the propositions that I undertook to prove.

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SIX SUCCESSIVE CASES WHERE THE ELECTRO-MAGNET WAS USED FOR THE REMOVAL OF FRAGMENTS OF IRON FROM THE INTERIOR OF THE EYE.

By A. BARKAN, M. D., San Francisco.

It has been my good fortune to have had within a year six cases of magnet operations for the removal of pieces of steel or iron from the interior of the eye. They illustrate a progress in ophthalmic surgery which is most gratifying. But although the magnet, reintroduced into practice by McKeown, nearly 20 years ago, is now quite frequently brought into use by specialists (Dr. Briggs, of Sacramento, having published a few years since a series of such cases), members of the general profession are not, I think, sufficiently familiar with the good results obtainable from it, more especially our fellow practitioners in the country, and particularly in the mining districts, and to them some little information regarding these very important cases may be of value, as, of course, it is to them that the sufferer first applies for aid. If a proper diagnosis, as regards the presence of a foreign body in the injured eye be made, and the magnet promptly and skillfully applied, many an injured eye might be restored to healthy, useful vision; still better, many a case of sympathetic ophthalmia, generally ending in blindness of the other eye, may likewise be prevented. Surely, therefore, no apology is needed for bringing these six cases before you, thus offering you the foreign bodies (one of which has been unfortunately mislaid) and the magnet for inspection.

In all, except one case, I found cocainization of the eye sufficient for operation. The conjunctiva, of course, becomes thoroughly anæsthetized, and the sclerotic, even without cocaine, would be hardly very sensitive to a clean, quick incision made with a sharp knife. If proper attention is paid to

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the speculum, so that it is certain not to press upon the eye, and could be quickly removed in case of an excessive efflux of vitreous, the operation is rendered much easier and safer when the patient retains consciousness. No friction or pulling about of the eyeball is needed after the initial cut, no undue hurrying of the work. No retching or vomiting during or after the operation, as is the case when a general anæsthetic must be given. Chloroform ensures complete rest, if *absolute* anæsthesia is enforced, but the narcosis therefore must naturally be pushed to the very danger limit.

My experience agrees with that of Dr. Knapp, and also I believe with that of Dr. Briggs, that foreign bodies in the vitreous are located by preference in the lower part. The *first* authority to which we all bow with grateful respect, likewise properly points out, that it seems legitimate, even when the foreign body can not be seen, either by exudation, or by limitation in the field of vision, be localized with any degree of probability, to open the capsule of the eye in the outer lower quadrant, and introduce the point of a magnet, neither too long nor too thin, directly into the bottom of the vitreous, then to withdraw it. In case the foreign body should not be reached, a second or third attempt could be made, probing cautiously a larger area of the interior of the eye. This can be done with perfect safety, and I have had good reason to feel grateful at having followed this method in three of my cases; but should the foreign body not then be brought forth, it will be more advisable to enucleate the eye than to make further attempts, because rough dealing with the interior of the eye, even if the foreign body should be eventually removed, too frequently causes cyclitis, which is dangerous to both eyes.

Finally, I must say that whilst the diagnosis of the presence of a foreign body within the eye might under some conditions be quite difficult to make, and mistakes may be made even by the most experienced, the operation itself may be considered easy, and fairly free from risk if asepsis be properly attended to, the sharpest of instruments used, and the magnet in good working order. The satisfaction of having successfully extracted foreign bodies, which otherwise would sooner or later have caused total blindness, and of having in a fair percentage

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succeeded in restoring useful vision, is indeed a very keen one, and I sincerely hope that some of my professional brethren in the general field of medicine, who hitherto may not have been fully aware of the therapeutic possibilities of the electro-magnet in ophthalmic surgery, may in future share in the work which partakes of "the quality of mercy which is not strained, but droppeth as the gentle rain from heaven upon the place beneath; it is twice bless'd, it blesseth him that gives, and him that takes."

FIRST CASE: *Unsuccessful removal of piece of steel 3 millimeters long, 2 millimeters wide and 16½ milligrams in weight. Enucleation.*

In July, 1894, S. R. L., a young working man employed in the Union Iron Works, came to me with a perforating injury of the right eye. The injury was of recent date, a piece of steel having perforated the inner and outer quadrant of the cornea. After atropinisation I could clearly discern that the lower half of the retina was detached, obscuring the background of the eye. A little below and behind the upper semi-circular border of the detachment, a foreign body seemed to be fixed, although only dimly visible. The eye was cocainized, the sclerotic incised, the magnet twice introduced, and the foreign body thoroughly searched, but it failed to make its appearance. As the eye was greatly inflamed, in fact panophthalmitis was drawing on, I advised removal of the eye. Cutting the eye open we found that the foreign body had perforated the retina, imbedding itself behind it, hence the reason why no contact with the magnet could be effected, *conditio sine qua non*, for successful removal.

SECOND CASE: *Unsuccessful attempt of removal of a piece of steel, encysted in the rear of the eye, 8 weeks after injury. Enucleation. Moral.*

A. B., 50 years of age, resident of a mining town in the interior, consulted me on December 5th, 1894. He had been struck on the left eye, eight weeks previously, by a small piece of steel. During that time he had been attended by a very good observer and a conscientious physician. *There was no pain at any time*, and scarcely any redness. Finally the patient was referred to me. *Status præsens*, a small, irregular scar in the middle of the lower and inner quadrant of cornea. Iris adherent to it. Pupil fairly well enlarged by atropia and pupillary field filled with masses of grayish, soft cataract, preventing a view of the background or vitreous body. Symptoms of irritation almost entirely absent; the eye not sensitive to light. No lachrymation and but slight pericorneal injection. In distinct contrast with this external favorable appearance of the eye vision was found disproportionately impaired. Only an indistinct sensation of light was present. Patient often contradicted himself. *Projection of light defective.* The background of the eye had evidently

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been considerably injured, causing extensive intraocular hemorrhage or retinal detachment.

Suspecting the presence of a foreign body, I hoped by making a large lineary corneal incision to evacuate both the masses of cataract and the foreign body, and thus at least save the eyeball. I was however disappointed, for after some of the cataract matter had been removed, vitreous prolapsed, but no foreign body. I therefore deemed it wiser to bandage the eye without making any further search. Under bandage and atropia treatment the eye healed well. The patient suffered no pain, and there was but very slight sensitiveness on pressure. In a week the eye appeared to be doing as well as previous to the operation. Still, although the cataract was mostly removed, sight and projection of light remained as bad as before. No change occurred for some days, then a very small irregularly-shaped black object made its appearance on a line with the corneal wound amidst the remaining slight cataract debris. It looked very much like a foreign body which might have penetrated as far as the lens, and have remained imbedded there, thus explaining the remarkable absence of pain since the injury.

On the 18th, therefore, a large lineary corneal incision was made, the first being completely healed, directly behind the point of injury. Hirschberg's powerful magnet was introduced, pushed as far as it would go into the vitreous and turned several times in every direction, but not bringing forth any foreign body. The disappointment was thorough and the temptation great to leave the eye alone. Neither did the patient expect any further operative efforts on my part, he, as well as his physician, supposing that the cataract and impairment of sight had been produced by a blunt traumatism from a foreign body, but that the foreign body had not entered. Such, however, was not my opinion. Notwithstanding the absence of all pain from the beginning, of the kindly healing of the first traumatism and of the operative wound, the defective sight, and especially the defective projection of light, caused me to persist in thinking that a foreign body must be within the eye, and that our inability to remove the same with the magnet, must be due to the foreign body being encysted in tissue and out of the direct reach of the magnet. I urged removal of the eye and the patient reluctantly submitted. The eye was removed the following morning and in it was found a good-sized piece of steel imbedded in a mass of choroid retinal tissue, detached and transposed by old hemorrhagic clots.

During a very large experience I cannot remember a single case where a foreign body had remained within the eye for more than two months with total absence of pain, and of almost all symptoms of inflammation. The correct diagnosis appears to me was due to the exact and, I would say, an almost unflinching interpretation of the peculiar vision, and projection defect of the eye which seemed to rise before me again and again, raising, as it were, a warning finger and preventing

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me from being deceived. The foreign body might and undoubtedly would have produced sympathetic inflammation and almost certain blindness of the other eye. On the other hand, what would have been the case if the patient had been referred to me immediately after the injury? The diagnosis of a foreign body in the vitreous, through the media of the eye, being then still fairly transparent, would have demanded an immediate introduction of the magnet through a sclerotic incision, and a probable removal of the foreign body, not being yet encysted.

There is so much special experience, and special skill of examination required in such severe traumatisms; there is so great a possibility of making mistakes even in the hands of a skilled operator, that, I am bound to say, a general practitioner should never take charge of any of them; even apparently the slightest should always be referred to the specialist, nor should any time be lost in doing so. Leave such a large, sharp, hard, heavy foreign substance within the eye 24 hours longer than unavoidable and it will necessarily do severe harm to the delicate tissue. "*Cito et jucunde*" is the motto in such cases, if in any.

THIRD CASE: *A piece of steel 3½ millimeters long, 1 millimeter wide, 3 milligrammes in weight, successfully removed from vitreous body with electro-magnet. Recovery.*

On September 27th, 1894, Dr. Nichols, of San Luis Obispo, referred one of the track-layers of the Southern Pacific to me, with a severe perforating injury of the left eye. Whilst striking a steel drill with a hammer, a piece of the steel was chipped off, which flew into his eye. He experienced only a moderate amount of pain. When I first saw him, a week after the injury, I observed a slight pericorneal injection, a lineary perforating wound 2''' long, extended over the center of the cornea; the application of a few drops of a half per cent sol. of scopalaminum distended the pupil quite well except at a point opposite the wound, where there was an anterior synechia. A capsular rent was distinctly visible; traumatic cataract was present, and from behind there seemed to be a dull reflex of a foreign body, although very indistinct; tension normal; quantitative perception of light and good projection; very little pain or sensitiveness to light or touch.

A consultation was held with Dr. Pischl, and as the doctor was interested in the operation it was agreed to proceed at once. The eye being cocainized a corneal flap was made upwards, but before the cut was finished the old corneal wound re-opened. Aqueous humor spurted out, and the opaque lens matter passed only through the newly made wound

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which had been made large enough to offer an easy exit for both cataract and foreign body, if it were disposed to leave its new habitat, and this the foreign body refused to do. The capsular wound was enlarged, a little more of the posterior cortical substance removed and the magnet introduced through the upper wound without success. I then introduced a delicate probe and thought I had struck the foreign body in a downward and inward direction. The magnet was reintroduced, but again no foreign body. Dr. Pischl advised that the eye should be left quiet for a few days, and bandaged, before again trying under chloroform, the patient being very difficult to manage. To this, however, I did not agree, fearing that unless the foreign body were at once removed panophthalmitis might set in. I thought best to try once more immediately, and in case we were unable to get the foreign body out the eye had better be removed. We proceeded accordingly, and on reintroducing the magnet for the third time, turning it well around in the vitreous body, the welcome click of contact of the metallic body with the magnet was distinctly heard, and the foreign body came out, attached to the end of the magnet. The prolapsed iris was gently pushed back and properly adjusted with a blunt hook. Eserine was used to keep the pupil contracted, and the iris in place, then a bandage applied. The patient suffered very little pain. For a few days there was slight ocular chemosis; the wound healed kindly. After passing through a moderately intense traumatic iritis, treated in the usual way, the patient was discharged a few weeks afterwards with an irregularly shaped pupil, some thickening of the capsule and the back ground but dimly visible. The eye looked well, not in any way sensitive, and though able to count fingers only he was most glad to see that much and retain his eye. Probably a subsequent iridectomy would greatly improve vision.

FOURTH CASE: *A piece of steel 2 millimeters long, 42 millimeters wide, and ¼ milligramme in weight successfully removed with magnet and forceps from the anterior chamber. Recovery.*

Julian Anton, a worker in steel, Slavonian by birth, and one of the most ungrateful wretches, presented himself at my office September 20th, 1894, suffering from a pretty severe injury of the right eye, which had happened a few hours previous. A small piece of steel had perforated the cornea a little to one side of its center, and could now be plainly seen, stretching across the anterior chamber, the inner larger end resting on the iris, whilst the forward end was just below the anterior surface of the cornea. The anterior chamber was of normal size, only where the foreign body rested on the iris, the membrane was slightly pressed inward. Applying the magnet to its corneal end the foreign body could be plainly seen moving in the anterior chamber; by successfully using good pressure with the probe of the magnet on the cornea, the foreign body was drawn out about half, but refused to proceed on its onward journey, its inner half being rather larger than the outer one, and catching in the cornea. Dr. Swett then grasped the precorneal end of the steel with the shank of a iridectomy forceps, whilst I held on with the

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magnet, thus securing the foreign body and preventing its falling back into the anterior chamber; then I drew it out, whilst the aqueous humor was flowing drop by drop. Atropia and bandage were applied. The patient made a perfect recovery within a few days; no synechia; normal vision.

In this case, most certainly, the groping with a forceps for the foreign body would have been very difficult, if not impossible, endangering probably a further pushing in of the same, and its falling into the anterior chamber, whilst the help rendered by the magnet in coaxing from the anterior chamber and its corneal incarceration at least half of the foreign body, was of a great assistance. The patient never as much as thanked me for the good work done.

FIFTH CASE. *A small particle of steel 1 millimeter long, ½ millimeter wide and $\frac{3}{10}$ milligramme in weight removed from the vitreous body by the magnet. Recovery.*

A. E. Matson; blacksmith; married and father of a large family; 32 years of age; came from Ashland, Oregon, accompanied by a medical friend, to consult me, on Saturday, August 31st, 1894. The previous Monday, whilst following his occupation, a spark from a hot iron flew into the man's left eye; he felt certain that the foreign body came out of the corneal wound, as he had seen it. No application was made of any kind. The following day it was with difficulty he could recognize people in the street, vision had become so dim in the injured eye that when a few drops of a 4-grain solution of sulph. of atropia had been applied to his eye he was unable to distinguish any one's features. What made the condition of the man, who had a wife and children dependent on him, still more distressing was the fact that eight years previous he had lost the sight of his other eye from an injury caused by a piece of hot steel 1½″ long, which in due time produced atrophy of the eyeball, an extensive scar reaching well into the ciliary region. Occlusion of the pupil, anterior adherent leucoma T–2. No soreness to touch in the eye. The recently injured left eye showed slight pericorneal injection—the mark of a point like penetrating wound was clearly seen in the middle of the upper and inner quadrant of the cornea. Pupil round, reacting promptly to light. Opposite to corneal wound a circular small opening of the anterior capsule about 1‴ in diameter could be clearly seen with focal illumination, the lens turning opaque, especially in the central part, from which many spokelike dark lines were passing towards the periphery. Between these there were sections of clear lens substance, through which the fundus was but dimly visible, details of the same not recognizable. Tension normal. No foreign body was at first recognizable within the eye, but though the patient was very emphatic in his assertion that the foreign body had *not* entered the eye, the lenticular opacities told a very different story.

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Having made all my arrangements for leaving the city on my yearly vacation the very day the patient came to consult me, and as I could not defer my departure, I requested a colleague to see the case with me, so that I could leave the patient in his care. He examined the interior with focal illumination and ophthalmoscope for some time thoroughly without being able to detect the foreign body, and expressed his opinion that there was none present. But taking my turn again in examining the interior, and gazing into it while the patient moved his eye quickly from right to left, I suddenly and unquestionably saw a small, yellowish-red glistening foreign body pass through the vitreous. My diagnosis was confirmed, and the same afternoon we proceeded with the necessary operation. All preparations being carefully made, and instruments perfectly cleansed, the eye washed thoroughly with a 1 to 20,000 solution of biniodide of mercury and a complete cocainization effected, the ocular conjunctiva was incised. With a silent prayer in my heart for the success of the operation on the only eye on which the patient was dependent for sight, I made a deep incision into the sclerotic 3‴ long with Graefe's knife. The patient behaved well, no vitreous escaped. Twice without result the large probe of Hirschberg's electro-magnet was introduced. The third attempt was successful; the tiny bit of metal clung closely to the end of the magnet. A few drops of vitreous were lost during and after the introduction of the magnet. The eye was speedily closed, without suture, the conjunctiva being simply replaced over the wound. We all heaved a sigh of relief. I left that evening and was informed a few days later that the pâtient was progressing favorably.

On my return to the city the patient had returned to his home, but kept me posted as to his condition. He wrote to me on October 31st, stating that his eye was improving and that he could get about all right. Subsequently he came again to the city. On examining the eye, I found it entirely free from irritation, looking to the right and exposing to view the spot where the operation had been performed, the sclerotical wound was well healed. A speck of opacity through the lens showed the track of the foreign body, slight posterior cortical cataract, but on the whole the lenticular opacities had been very materially absorbed. There were streaks and shreds of opacity in the vitreous, but, nevertheless, the interior of the eye had cleared up to such an extent that in the rear wall of the bulb, almost on a line with the corneal wound, a small pigmentary spot became visible, which was, I am inclined to think, the point where the foreign body was impinged and whence it fell into the vitreous. The optic disc and its blood vessels appeared normal. I had great satisfaction in finding that the V = 15/70; with C + 1, 0. Ax. horizontal. Some letters of 15/50 were seen. Snellen No. 12 was read.

As the opacities in the vitreous as well as those in the lens seemed to clear up gradually now that the metallic intruder had been extracted from the eye, I advised the patient to return home, to take good care of the eye, and choose another profession, as one escape from utter blindness was enough for

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a life time. A letter written by him on April 2nd, 1895, mentions that his sight is about the same as when he last visited me, and that he can identify a man with a favorable light in 25 feet; is getting on satisfactorily, and gratefully acknowledges the good service rendered him.

SIXTH CASE: *A particle of steel, 2 millimeters long, 1 millimeter broad, and one milligramme in weight, removed from the vitreous body with the electro-magnet. Recovery.*

Adolf Lang, 35 years of age, married, member of a well known beer bottling firm in San Francisco, came to consult me March 10th, 1895. On the previous afternoon, whilst he was striking with a chisel gently edgeways, suddenly a small chip of steel flew into his left eye, severely perforating the inner and lower quadrant of the cornea. Immediately sight was almost entirely lost, and some pain experienced. The next day on examination I found the eye quite sensitive to light, lachrymation, a good deal of pericorneal injection, a small corneal wound with sharp outlines; close behind it was plainly visible through the contracted and slightly hazy iris, an irregularly shaped hole through its tissue, about midway between its pupillary and ciliary edge. Several drops of 4 grs. solution of atropia failed to enlarge the pupil sufficiently. A couple of drops of a half per cent solution of scopolaminum produced in a few minutes an excellent mydriatic effect. Through the enlarged, round pupil the lens was found in situ, but numerous spoke-like opacities, especially in its inner half, rendered an examination of the vitreous body and of the back-ground quite difficult. After persistent exploration, however, of the interior eye, extending probably over an hour's time, using the method of examination in the upright image, getting close to the patient's head, I had at last the satisfaction of discovering a very small bright glittering bit of steel, which, when the eye moved quickly in the proper direction, rose up quickly, not unlike a small pointed shining fish scale. Patient could count fingers in 4 feet. Tension slightly diminished. (T–1.) The eye quite sensitive to touch, and moderately painful at all times. The patient's strong hope that the foreign body had not penetrated the eye was doomed to disappointment. An operative removal of that foreign body, and subsequent removal of the eye, should the operation prove unsuccessful, was, of course, the only advice to give, which the sensible patient accepted.

The next morning, although the patient had a fairly good night, he was suffering from nervousness, and it was deemed best to administer chloroform rather than ether, in order to avoid restlessnsss and vomiting. The narcosis was very effectual. After the eye had been thoroughly washed with Panas' solution (biniodide of mercury, gr. ¼, dissolved in absolute alcohol, ʒiv; distilled water, 1 quart), and the conjunctiva properly detached, I plunged a Graefe knife well through the sclerotic between the course of the external and inferior rectus muscle, commencing at a point a little in front of the equator, thence backward to the ex-

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tent of 2½—3‴. Vitreous commenced at once oozing out, and the introduction of the largest Hirschberg magnet probe deep into the eye, kept up the little streamlet. With the intense excitement of a fisherman who draws up his net to examine its contents, the magnet was drawn forth and no foreign body attached to it. A second time the magnet was introduced towards the lower and inner half of the eye ball, where I made sure from previous examination the piece of steel was lodged, only to be again disappointed, when withdrawing the magnet. Meanwhile a dangerously large amount of vitreous had escaped, and the patient showed signs of coming to. The third time I slipped in the magnet probe, turning it in an opposite direction, making an absolutely complete search of the lower half of the eye ball, when, oh! the pleasurable sensation! I had succeeded in hooking my fish this time, in the shape of a very small particle of steel, two millimeters long, one millim. broad and weighing one milligramme, firmly adhering to the end of the probe. I would have liked to apply a conjunctival suture, but as the narcosis had been so complete, and the patient was commencing to be restless, it was deemed best to simply apply a few drops of atropia and to place an occlusive bandage over both eyes. The patient showed no ill effects from anæsthetics, either at the time or immediately after operation.

When the eye was dressed, 48 hours subsequently, the absence of pain, of discharge and lid swelling, clearly demonstrated that the wound was healing kindly. The lids, therefore, were not opened; a few drops of atropia were applied morning and evening. Under this simple treatment, the patient lying undisturbed on his back, the eye at the first examination, a week after the injury, presented a very satisfactory condition. The wound had perfectly healed, conjunctival flap covering it well, slight pericorneal injection, sound pupil, no trace of iritis, could count fingers held before the eye. A few days later I found that the lenticular opacities persisted just as before the operation; and fundus was visible but no details. Fingers counted in 3′. The eye is looking very well.

Three weeks after, although easily fatigued, a part of the lens seems to have cleared up slightly, more red reflex from the fundus, but the lenticular opacity being thickest in the center. Vision keeps about the same. Eye free from irritation; pupil uniformly enlarged. Three drops of atropia twice daily. With the ophthalmoscope cataract is seen to be increasing, but little of red background visible. February 13th, projection upward, and up and inward somewhat indistinct. February 18th, pericorneal injection persisting to a slight extent down and inward. Iris, greenish, slightly discolored. Tension for the first time diminished. Motions of the hand are perceived but fingers are not counted. Atropia being continued, the slight attack of iritis gradually subsided. The eye now is free from all irritation and presents a good appearance, the nuclear part of the lens still opaque. Fingers are counted in 4′. A future cataract extraction will greatly improve his sight.

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DISCUSSION.

DR. K. PISCHL, of San Francisco: A young man, who had lost his right eye, was brought to me a little while ago, blind. Four days previous he had tried to open a cask of pickles, and a small piece of iron or steel entered his left eye. I saw him four days after the injury; he could not see any objects; he could barely see the light and showed no projection. I could not give him much hope. I told him I did not believe the eye could be saved, but we would try. Though the pupil was dilated I could not get any reflex. Instead I could only get a grayish yellow reflex, which indicated that the vitreous was infected, and that there would be suppuration. I introduced a magnet and removed the steel, and the eye cleared up. Now, in about half a year we have a cataract, but the patient sees light and projects very well. After removal of the cataract I can sincerely hope and expect that the patient will keep his eye and be able to see.

DR. WM. ELLERY BRIGGS, of Sacramento: I congratulate Dr. Barkan upon the results obtained in his series of cases. I have had a series of fortunate cases, and am now having a series of equally unfortunate cases. I think there is nothing in surgery more gratifying than the successful termination of an attempt at removal of a foreign body from the eye, and saving that eye. But still more gratifying have been one or two of my cases where I have saved almost perfect vision. In one case that I reported in the series of cases some years ago, the ultimate result was very good. After a year from the time of the operation I saw the patient a second time. The history of the case was somewhat as follows: He came from a neighboring State, with a note from an oculist who had been treating him for eight weeks for supposed rheumatic iritis. The man had iritis. After observing him for a day or two I examined his vitreous as carefully as possible, and came to the conclusion that there was a foreign body in the eye. I asked the man for a history of his case, and he said two or three days before he went to the doctor he had received a slight injury to the eye, but he did not believe there was any foreign body in it. The doctor examined his eye carefully, and in the future treatment saw no evidence of a foreign body being present. There was considerable yellowish reflex in the lower

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part of the vitreous, and he consulted two oculists in San Francisco, who thought there was probably a foreign body. The doctors wrote in their note that they thought it was entirely improbable that the eye could be saved, and I really believed that myself. They said also it was worth an effort, and I made the effort, and was very successful in removing the foreign body; it was a small particle of steel. The man improved from that time on. He had extreme pain for weeks before this. After the foreign body was removed he had no pain. He returned home in three or four weeks. Before the operation he could count fingers at about three feet; before he went home he could count them at twenty feet. When I saw him later I do not now remember the exact amount of vision, but there was enough so that he could earn his living if the other eye should, by any accident, be lost. His occupation was that of a mechanic. That to me was one of the most gratifying results I have had. I have had one or two others that have attained more acute vision than in this case, but unfortunately they are not all so satisfactory. I have had quite a number of experiences that were very discouraging. When you are sure there is something in the eye there is nothing to do but remove it. The great difficulty in this operation is in deciding whether it is best to attempt the operation. The operation itself is not so difficult as the importance of making an accurate diagnosis. In almost every case it is very difficult, and requires a good deal of skill in making the examination.

Dr. J. D. Arnold, of San Francisco: I wish to mention one case which is of no especial importance except to point out the fact that one should not always be too much discouraged by a failure in the first place. The case that I refer to was where a small piece of steel had found its way into the eye. The patient was sent from the country, and, using the magnet enforced by some gravity cells, an attempt was made, making two incisions and introducing the magnet half a dozen times upon each side to get to the body. But no body was found, and after these experiments the family of the patient was not inclined to have the thing tried again. So the patient was let go home, with the advice that if the foreign body gave future trouble, and if there were any signs of inflammatory reaction, he should return. About seven months after that he

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returned with nothing apparently but a traumatic cataract, but with absolutely no inflammatory symptoms, and he assured me there had been none since the former failure to extract the foreign body from the eye. The cataract was operated upon, and on the posterior portion appeared a small portion of steel, and it was adherent to the lens, and came out with it. The question in such a case would be, what would have been best; to continue one's attempts to extract such a body —it was very small, not more than one-sixteenth of an inch in length,—or whether to follow the method I adopted, not exactly as the result of my own judgment, but because the patient's family would not permit any more interference. It might seem to point in two directions: in the first place, that one should not be discouraged after repeated failure to extract, and it might again point the other way and prove to us that one should not make too many attempts, unless after one or two reasonable attempts there appears to be danger in continuing it, or where there is no possibility of either seeing the body in the eye by examination or of getting any index with the magnet as to its presence, whether it is withdrawn or not.

DR. BRIGGS, of Sacramento: I have a patient under observation at present who has a piece of steel in his lens. When he came to me the lens was at least two-thirds cataractous, and in nearly six months there is hardly a change in the cataract. The condition of the lens has not changed. The eye has never shown any inflammatory reaction to speak of. He never had any pain or bad symptoms. Vision has not increased, but I think it is best to let it alone unless it is thought best to remove the cataract and the steel at the same time.

DR. BARKAN, of San Francisco: It is the discussion of such practical and very important topics as these, and being in close feeling with surgery that suggests to my mind the advisability of, perhaps, on further occasions, interpolating a few of these papers between the general transactions of the Society. I confess to being somewhat disappointed in seeing here this afternoon only a number of confrères, whom I am very glad to meet, and as it is the purpose of the State Medical Society to bring all branches of the profession in close feeling,

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I would very humbly suggest for future guidance that we be given such an opportunity.

THE PRESIDENT: The same observation has been made by a number of the committee. The programme was arranged by taking special subjects, thinking it would be more in accordance with the desires of special practitioners. I think the paucity of members present this afternoon is accounted for entirely in the way that Dr. Barkan suggests. A great many feel that they are not interested in these particular subjects, when this one is particularly important to the general practitioner, and, as one of the officers, I fully agree with what the speaker has said. It would be better to interpolate subjects of this kind in the general program.

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Rhinology.

ATROPHIC RHINITIS.

REPORT OF COMMITTEE ON LARYNGOLOGY AND RHINOLOGY.

By W. A. MARTIN, M. D., Chairman, San Francisco.

The progress in our specialty has not been so marked during the past year as in some of the preceding years. We are rapidly approaching that period, already attained in some of the other branches of medical science, when we may no longer look for new and startling discoveries. That there remains much to discover in the etiology, pathology, and in the treatment of throat and nasal diseases, we are all well aware, but the road to discovery is annually becoming more difficult. The surface has been well prospected, so that we must search deeper for new and interesting facts. When a new territory is opened we find that the rush of the homesteaders is to the reputed richest portion, often passing hurriedly over parts, which would be richly productive if properly worked.

So it has been in the field of rhinology. The parts most studied have been where the causes of trouble were seemingly cropping out. The tendency now is to return to the original territory and see if the pioneers were not at least a little hasty in passing judgment and in formulating theories on subjects that reveal themselves quite differently on closer investigation.

Atrophic rhinitis, the subject of this paper, has been studied with renewed interest during the past year. It has proven a stumbling block to rhinologists. The voluminous variety of causes and theories that fill our special literature are sufficient evidence of our ignorance of the etiology of this disease. Authorities are divided in their opinion as to whether it is the result of local or constitutional disturbance; whether it is caused by microbic, atmospheric or other irritating insult; whether it is the result of purulent or hypertrophic rhinitis; whether it is the result of general dyscrasia, an inherited syphilis or blenorrhœa, or whether from other suspected, but less plausible, source.

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The lastest theory to claim our attention is that supported by Grünwald, namely: that the source of the trouble is to be sought for in the accessory sinuses; that one of the principal causes is carious bone that lies concealed in a sinus. Bresgen adopts the theory and reports, in a short period of a few months, eleven cases successfully treated after the manner of Grünwald by washing out the affected sinuses, by the removal of carious bone in several instances, and after-treatment with hexa-violet.

All new methods and theories are apt to be substantiated, in the first few months of their often short life, by enthusiasts, whose zeal to be first in the field leads them to pass favorable judgment on any new methods which find their way into the columns of a reputable journal. For this reason it is well to hold our judgment in suspension on such reports, not doubting, but only waiting a more general verification. The question whether the trouble in the sinus is primary and the atrophic condition secondary, or whether the sinus trouble is secondary to the nasal condition, is one that finds numerous supporters on either side. Anyone who has carefully noted the manner in which the secretions accumulate in a well-defined case of atrophic rhinitis will agree that they exude from one or the other of the different sinuses. The secretions are found adherent below the ostium of one or more of the accessory sinuses, usually below the ethmoidal, sphenoidal or frontal. The middle turbinates are encased in inspissated secretions, they course down the posterior third of the septum, and frequently are also found adhering to the vault of the pharynx. The lower turbinates, especially the anterior two-thirds, are generally free. Whether this is because the secretions are accessible and easily removed, or because they gravitate most naturally toward the pharynx is a fact not easily proven. This condition only goes to prove, however, that in an advanced stage of atrophy the secreting apparatus of the sinuses is still active, after the glands in the other portions of the nasal tract have become inert. A sinus complication may or may not be coexistent with an atrophic rhinitis, as demonstrated by post mortem examination.

The cause of the diverse opinions on this question is, that

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no one, as yet, has recognized the trouble in its earliest stage. Zuckerkandl confesses that, with all the wealth of material that has been at his disposal, he has not yet discovered the disease in its incipiency. The disease is one that causes very little inconvenience until it is well pronounced. It commences in childhood and probably very little attention is paid to it by the general practitioner, and it is regarded as too inconsequential by the parents to bother about consulting the specialist.

It is questionable whether it ever appears after the age of puberty. Schech says he has seen it develop twice in adults. Bosworth, who upholds the theory that the disease is a later stage of purulent rhinitis, says that the purulent rhinitis is a disease of childhood, while the atrophic condition manifests itself in maturer years, but probably never later than the twentieth.

Those who believe that atrophic is the final stage of hypertrophic rhinitis, base their opinion on the fact that there is undeniable microscopical evidence that there has been at one period an inflammatory condition; ergo, it must have been a hypertrophic catarrh; or because the two conditions are often found side by side, one must necessarily be a result of the other. If there has been a period of hypertrophy, it must have been in early childhood before the seventh year, which is improbable. There may have been an intumescent rhinitis, but a true hypertrophy does not develop until maturer years. Nobody ever has seen, and I feel safe in saying that no person ever will see, a hypertrophic rhinitis in an adult develop into an atrophic rhinitis, unless induced by trauma. I can find none recorded in the literature of the subject.

My own experience, and the knowledge gained from the experience of others, warrant me in describing the anatomical conditions found in true atrophic catarrh, as follows: Both nostrils are symmetrically affected. In twenty-two cases examined in the past six months I have not found a single exception to this rule. I question very much whether it is ever unilateral, in spite of the unsubstantiated statements of several competent authorities. Simple atrophy from loss of function caused by a stenosis is frequently met with in one nostril, but this is an altogether different condition from the one under discussion. The inferior turbinates are most affected

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and show an atrophy extending from the anterior to the posterior extremity. It may be partial or complete, so that there is only a ridge marking the position of the missing structure. The middle turbinates may be found either normal, hypertrophied or atrophied, or there may be a mixed condition. The septum may be deviated, but it is rare to find any prominent spurs or cristæ, although I see no reason that the condition precludes their existence. The mucous membrane of the pharynx may show an atrophy extending from the vault to the epiglottis, or the atrophy may be limited to the upper part. The ostium of the Eustachian tube is crater-like in appearance and can be easily seen through the lower meatus. In several instances I have been able to distinctly see the opening of the sphenoidal sinus, and other sinuses are easily accessible by means of the probe. This is as much as one may determine by anterior or posterior rhinoscopy.

I have made no microscopical examinations, but am perfectly willing to accept the finding of the numerous competent authorities, who have reported their investigations on the subject, as they agree in most details.

The histological changes are: A round cell infiltration, showing the existence or pre-existence of an inflammatory process. A sparseness and a degeneration of the glands. The columnar-ciliated epithelium is changed into a pavement epithelium. These are the main features. Changes are also noted in the basement membrane, in the vessels, and in the bone.

Pathologists recognize the following forms of atrophy: Senile atrophy,—atrophy from loss of function,—from pressure,—from inanition,—and neurotic atrophy. The only one of these that deserves any attention as applied to atrophic rhinitis, in my opinion, is neurotic atrophy. The other forms may be dismissed with a word as impossible. All the symptoms, all the histological changes, the manner of development, etc., clearly point, in my opinion, to a nervous lesion,—a lesion in the trophic nerves, causing a retarded, or an arrest of, development.

The theory of arrested or retarded development suggested itself to me before I made any research in the literature pertaining to the subject. I find, however, that the first to sug-

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gest it was Gottstein. I have not been able to obtain the original publication, and find it has been ignored by nearly all writers on the subject. Zuckerkandl simply mentions it in a casual way. I find the theory again mentioned in the discussion of a paper on the subject of Ozæna by Wyatt-Wingrave, read before the British Laryngological and Rhinological Society, Dec. 8th, 1893, reported in the *Journal of Laryngology*, February, 1894, by Lenox Brown, who said, "The theory of Gottstein, that arrested development originates the pathological changes, is the most reasonable yet offered."

Zaufel, and before him Hyrtl, advanced the theory that the disease was caused by a congenital defect in the parts. Zuckerkandl combatted this theory by the practical method of examining 252 skulls of children, 30 of whom were but a few months old. In only one of these, a boy 12 years of age, did he find any deficiency of the turbinates, and this was a case of atrophic rhinitis.

While I differ in theory from Zaufel, I do not think that the absence of a congenital defect in 252 skulls absolutely convincing proof that his theory is wrong, as I do not believe that statistics will show one person in 252 afflicted with the trouble. While there occasionally may be a congenital defect of the turbinates, I believe that the nasal structures are normal at birth, and develop normally until about the fifth or seventh year. Commencing with the second dentition until the age of puberty, the development of the facial bones, and particularly the nasal, is more rapid than during any other period of growth. It is during this period that the nose assumes its permanent shape. It is during this period that deformities show themselves, and it is during this period that atrophic rhinitis commences to develop, culminating at the age of puberty or maturity.

The symmetrical manner in which it develops naturally indicates that it is not a purely local trouble. If it owed its development in both nostrils to an infection, or to an autoinfection,—that is, to a communication of the disease from one nostril to the other,—we would occasionally find a case in which such an infection had not taken place and the atrophy would be unilateral, or we would find the condition in different stages of development in the separate nostrils, or finally we would

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occasionally find it unsymmetrically developed. In my experience, none of these various conditions are ever found. The parts attacked remain underdeveloped. Growth is not necessarily entirely arrested. The affection may be such that the nutrition of the parts is only partially withheld, so that the growth of the affected structures is slower than the surrounding parts.

The changes noted by the clinician, as well as by the pathologist, follow naturally in regular sequence. The inferior turbinates developing from separate centers than the ethmoidal turbinates, are controlled in their growth most probably by different ganglionic centers, but each pair is controlled by a single nerve center. In this way the symmetrical development is readily explained.

The different degrees of intensity of the morbid changes are dependent on the degree in which the turbinates are retarded in their growth; for convenience of description, three degrees or types of atrophy may be taken into consideration:

First Degree, or Type: The lower turbinates alone, or together with the middle, being only slightly smaller than normal, there are only slight changes to note. The nostrils are larger than normal, secretions are tenacious, but not found crusted and adherent. The pharyngeal mucous membrane is dryer than normal and there is considerable dripping.

Second Degree, or Type: The inferior turbinates are almost if not entirely atrophied. The middle partially, or they may be found normal, or hypertrophied. There is considerable crust formation, but there is not necessarily any odor attendant. The pharynx is also more or less affected, but not necessarily more so than in the first degree.

Third Degree, or Type: Or complete atrophy. In this condition we find both turbinates affected. The sinuses are usually invaded. There are crusts adherent throughout the nostrils and also in the vault of the pharynx, and the odor is frequently intense. The pharynx is more or less intensely affected.

The histological conditions of the mucous membrane are dependent on the degree to which it is exposed. The first effect on the glands already mature is to call forth an excessive secretion in the effort of a few to do the work of a normal number. With the enlarging area the work is increased, so

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that shortly they are unable to meet the demand. The secretions become abnormal, purulent, and the glands degenerate. The secretions evaporate rapidly. The surface being no longer properly lubricated or moistened, the ciliated cylindrical epithelium is gradually transformed into a pavement epithelium, in exactly the same manner an everted mucous membrane changes in character to a structure resembling the cutis. With the destruction of the cilia the secretions are no longer expelled in a normal manner, but dry and form crusts.

In complete atrophy the openings to the sinuses become exposed, but the lining mucous membrane not being subjected to the action of the air to the same extent as the nasal mucous membrane, the changes are not so marked; however, the secretions are increased and may be purulent. The vitality of the lining membrane is lessened, and the secretions are not expelled as rapidly as normal, and in consequence decompose. If carious bone is found, it is probably owing to the action of the decomposed secretions on the abnormal membrane, leading to gangrene and exposure of the bony structure.

All the various changes noted by the different authors are thus accounted for in a perfectly rational manner.

What causes the neurosis that gives origin to the atrophy? This is the profound question. We know that many of the acute infectious diseases of children are attended with complications in the upper respiratory tract,—particularly measles, scarlet fever, and diphtheria. Atrophy has been said to follow scrofula and anæmia, and congenital syphilis makes its first appearance as a rule in the nose.

It is not rare that paretic or paralytic sequelæ are noted in the throat after diphtheria, and it would not be surprising if the trophic centers were also affected in this, as well as in other diseases of childhood that are attended with nasal complications. It is difficult to get a reliable history of diphtheria from a patient, especially one that will suit the exacting requirements of the present era of medicine. Only two of my patients gave a reasonably certain history of the complaint, but all the others confessed to either measles, or scarlet fever.

Of twenty-two patients, they had all passed the age of puberty, but without exception they dated the commencement of the trouble to about, or before that age. Only three out of

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the twenty-two had passed the thirtieth year; the great majority had not attained the twentieth year. The cause of this disparity is that probably having reached the thirtieth year without experiencing any benefit from treatment at the hands of the physician, or having learned to apply the various sprays, douches, etc., themselves, they no longer consult the medical man. It is also possible that being deprived of the natural protection of the normal nasal structures that they succumb more easily to pulmonary troubles. Certain it is, however, that nine-tenths of the cases that come into the hands of the specialists have not reached the twenty-fifth year.

Treatment.— The task of restoring the nasal mucous membrane to a normal condition is like trying to make hair grow on a bald head. The trouble must be classed among the incurable diseases. It may be alleviated. Most patients are satisfied if relieved from the annoyance of the dry secretions and the attendant odor. Most cases of partial atrophy come to the attention of the specialist incidentally, most frequently in connection with aural trouble; as the nasal affection causes little annoyance it is neglected.

Treatment that has been reported as most successful consists of methods that either retain or supply moisture directly or indirectly, thus preventing the drying and crusting of the secretions, and which at the same time facilitates their removal. The cotton plugs of Gottstein, either dry or moistened with glycerine, act simply in a mechanical way by excluding the air, and preventing the withdrawal of moisture.

Glycerine suppositories and bougies act simply by increasing the secretions and in softening the crusts. Borax-glycerine, in the form of a spray, as extolled by Musehold, acts excellently in partial atrophy, in aiding the removal of the crusts, but is not curative. To any of these some deodorizing medicament may be added, which, if not disfectant, at least neutralizes the odor.

Massage, which has been reported as performing miraculous cures, has been tried and found wanting in my own hands, and I doubt its efficacy. The mechanical irritation produces a hyperæmia and swelling of the tissues, that resembles for a time a normal condition. A serous secretion is produced, on account of the increased blood supply,—that is probably not

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from the glands, but principally an exudation from the capillaries themselves.

It is possible that a hypertrophy of an already atrophic tissue may thus be produced. Bleeding is frequently induced if the massage is continued any length of time. For this reason I had to abstain from the treatment in one instance. After stopping the treatment the parts gradually resume their former condition of atrophy.

I consider any peripheral irritation as useless, for the condition of the parts is the result of a peripheral irritation on account of the increased exposure.

The application of the cautery or cauterizing agents is barbaric and homœopathic with a vengeance. A cicatrix on an atrophic membrane is in my opinion a superlative form of atrophy.

The method of Grünwald of treating the sinuses, and removing carious bone when found, is certainly worthy of our attention, especially washing out the sinuses when accessible. I was unable in any of my cases to find carious bone, and hexa-violet recommended by Grünwald seems equally scarce in this part of the world.

You may ask why I would not treat it as any other neurotic atrophy is treated,—by electricity, galvanization or faradization, by strychnine injections, etc., etc. I have no objections. They will prove about as effective here as in other forms of nervous atrophy.

All that treatment really effects in these unfortunate cases is to cleanse and to make life tolerable for the sufferer and his surroundings.

DISCUSSION.

DR. J. D. ARNOLD, of San Francisco: Dr. Martin's paper is, I think, a little more original than he himself believes. Atrophic rhinitis is a subject that has been so thoroughly ventilated in all the journals and in all medical societies, and the conclusions heretofore have been so unsatisfactory, especially as regards the suggested therapeutics, that it is an interesting subject for the specialist, though I fear the general practitioner cares very little about it, and heretofore every one has had to make his chapter on therapeutics about as skeptical as it is in this case with Dr. Martin. He says that all that can be done

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in such a case is to remove the secretions, and the result of the drying of the secretions in the nose and in the pharnyx, which always constitutes the most unpleasant feature of the case. Up to date I fear that no treatment for atrophic rhinitis has ever succeeded in doing any more than he has just told us, to remove the most unpleasant features of the case. Dr. Martin says he believes atrophic rhinitis to be a developmental disease, and he also laid down the point that so far as his own observation is concerned, and that of a number of others whom he quoted, hypertrophic catarrh has never for its outcome an atrophic catarrh except in cases where it is traumatic. I do not believe that the facts in the case will substantiate his theory at all, and I can only say in so far as my own experience is concerned, that it has frequently been the case that there would be an atrophy of one portion of the schneiderian membrane and a hypertrophy at another. It is not an unusual thing to find hypertrophy and atrophy side by side in the same case. In so far as it is confined to one nostril, it is the experience of the authors, at least those that have been accessible to me, that it is not a very unusual thing to find it confined to one part of the nose strictly. It is not an unusual thing to find it strictly confined to one of the turbinated bodies, and it is not unusual to find it affecting not only the whole nose, posterior and anterior, but also the pharynx, larynx and trachea. It is not very long ago, perhaps a year and a half, when some French writer, I cannot recall his name at present, announced to the world that he had discovered another form of laryngeal disease, and to the ordinary forms he added that of dry catarrh of the larynx, and in every single figure it agreed with atrophic catarrh in the larynx. There was that almost complete atrophy of the mucous membrane itself, and the characteristic yellowish green and sometimes greenish scab strongly adhering to the membrane; so strongly adherent that it is impossible almost for the patient to void his secretions himself by voluntary cough, or to remove them in any way except by the use of some mechanical means in the larynx. In the eight cases which this doctor reported it was a direct extension from the ordinary atrophic rhinitis down the mucous membrane to the lower portion of the trachea. The theories which have been advanced to explain the condition of the mem-

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brane with one exception have been almost directly opposite to the conclusions brought out by Dr. Martin. The original idea that atrophic rhinitis was a disease dependent upon a rudimentary condition of the turbinate bones or to their absence was entirely negatived by the work that the doctor has quoted, and that portion of work that he quoted was entirely in the first volume, but in the second volume of the work, which appeared eight years after the first, the author very distinctly lays down these points: (1) That the two types of catarrh may be co-existent; (2) that he believed from anatomical investigations that the atrophic form is always a sequence of the hypertrophic form. I am very sorry to have to say that every writer upon the subject, with one exception alone, and that one just discovered or reported by Dr. Martin, holds exactly opposite theories to him upon every single point. Dr. Martin will make all of us reconsider our preconceived notions upon this point, and, perhaps, after all we will find all the other fellows wrong and Dr. Martin right. It is not impossible, I am sure.

DR. MARTIN, of San Francisco: It depends altogether on how the nervous lesion arises; whether it is a peripheral, or a central neuritis. If a peripheral nerve is affected, it depends on the distribution of the nerve, of which we know nothing at all. It may be that certain areas are affected and certain areas are not. As far as the extension of the atrophic rhinitis into the larynx is concerned, that is easily explained by the theory that the conditions that appear in the naso-pharynx and in the pharynx are simply the result of extension. In that way the mucous membrane is exposed, and there is no limit to the extent it might go. It may pass into the larynx or bronchi. The functions of the upper areas are principally to supply moisture. As to the statement that atrophic rhinitis is a result of hypertrophic rhinitis, Zuckerkandl simply makes the statement that he believes such and such is the case. He also states that we know the beginning of the disease, and we know the end of the disease,—the beginning of the disease being an inflammatory condition, and the end of the disease an atrophic condition. He says we are unfamiliar with whether it is a result of hypertrophy or not; he does not state absolutely, but it is simply his belief that it is so.

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THE REASONS FOR SUPPLEMENTARY COURSES IN THE TREATMENT OF CHRONIC INFLAMMATION OF NASAL PASSAGES. THE TIME WHEN THESE COURSES SHOULD BE REPEATED. THEIR NUMBER.

By THOS. F. RUMBOLD, M. D., San Francisco.

The Supplementary Courses of treatment of chronic inflammation of the mucous membrane of the nasal passages are a renewal of the applications of a proper medicament to the nasal passages and throat by means of the spray producers, given at such seasons of the year as the patient is most liable to have renewed colds in his nasal passages, throat or ears. They are given to a patient who has been under the care of a physician long enough—from two to four months if an adult—to reduce his nasal inflammation to such a condition that he does not complain of any of his former disagreeable symptoms; but not long enough for him to have completely recovered. The secretion from the mucous surfaces, in such a case, has assumed nearly its normal character and quantity, and all the abnormal growths, should there have been any such, have been removed from his nose, throat or ears.

Importance of Supplementary Treatments.—During my pupilage with Dr. S. D. Gross, in the fall of 1861, I was fortunate enough to discover that an important feature of the treatment of this disease was that a few treatments should be given in the spring or fall following the completion of the first course, the number being gauged by the age of the patient and the severity of the disease. I was more fully impressed with the necessity of this course while treating cases of nasal disease in the U. S. General Hospital, Jefferson Barracks, Mo., from 1862 to 1865. While in this hospital I had a number of such patients under my sight for nearly three years, so that I was well able to judge of the liability of the disease to return at the changes of the

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seasons even under the most favorable circumstances. While in this hospital I found that instead of giving a few treatments spring *or* fall, they should be given spring *and* fall, that is, *two* seasons after the first course instead of one.

In a paper I read in the St. Louis Medical Society in June, 1868, on the "Treatment of Simple and Ulcerative Rhinitis," I stated the importance of such treatments. The points of the paper were the hygienic rules which I directed my patients to follow during and after treatment, and the "necessity for spring and fall treatments to maintain the still weakened mucous membrane in such a condition that it could in time recover its normal defensive power, so as to withstand the inclemency of the weather at the changes of the seasons of the year;" both points absolutely essential to the ultimate cure of this disease. By this time I found that *more* than two seasons of supplementary treatments were required for some patients.

This was published in pamphlet form in 1870. In my work on the "Treatment of Nasal Catarrh," 1881, on page 255, I stated: "These fall and spring treatments [of patients from 20 to 40 years of age], will have to be repeated from three to five years; and concerning the oldest class, they will have to be repeated fall and spring, or fall or spring during their life time." Showing that I had again increased the number of supplementary treatments. In my work on the "Medical and Surgical Treatment of Catarrhal Diseases of the Nose, Throat and Ears," 1888, pp. 447–476, and again in the *Journal of the American Medical Association*, June, 1893, p. 885, I repeated the same thing.

The Liability of the Return of the Disease.—One of the reasons for the general impression that nasal inflammation is incurable—an impression that exists among the medical profession, and is held by the laity—is that the disease is universally observed to give evidence of return at the next change of the season after the first long course of the treatment, either spring or fall. This return is observed in all patients, from the tenth or even, in some instances, from the fifth year of age, upward. This return is taken as an evidence that the first long, expensive course of treatment did not cure the case, and, *be it marked, this is true;* but if a few treatments by the spray producer are given at the right time, it will be found that all of these symp-

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toms disappear at once, that is, in very much shorter time than during the first course of treatment. Generally the supplementary treatments in the spring and fall amount in number to about 10 per cent of the number of the first course. For example, if a patient has required fifty or seventy treatments during the first course, the supplementary treatments will be about five or seven during spring and fall. If the patient takes good care of himself the number of these spring and fall treatments will gradually decrease year by year, as his mucous membrane returns to its normal condition, and it always does return to this condition if the patient—under 45 years of age—takes good care of himself. As all the growths have been removed during the first course, the case is one of uncomplicated nasal inflammation, and this inflammation is *not* of a chronic character, and disappears under a few treatments.

The ultimate curability of this disease is a frequent subject of discussion during the first course of treatment of a patient. After he has been under care for a few weeks, long enough for me to be enabled to judge as to the length of time required for treatment, I tell him, as agreed upon the day of the first visit, about the number of treatments of the first course, and about the number of courses of supplementary treatments as well as the number of treatments. The whole subject is usually talked over, so that there is a perfect understanding, and with this understanding the patient places himself under my care *for a term of years*, the length of which will be the chronicity and severity of the disease.

Almost always the patient will voluntarily say that he will not forget to call for his spring and fall treatments; but should he do so, I write him a letter, again going over what was stated to him during the first course of treatment, plainly telling him that the supplementary treatments are required to continue the healing process commenced by the treatments he has received. The fact that the patient has been relieved of troublesome subjective and objective symptoms renders him unconscious of the necessity of further treatment and the dread of further increasing his expenses is an additional reason for keeping away from his physician, notwithstanding the promise to return; but the certainty of the return of the disease and the uncertainty of the

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patient, makes it imperative that he be reminded concerning the importance of the supplementary courses.

While it is a matter of importance to the rhinologist's reputation that these supplementary treatments should be given, it is a matter of as great difficulty to get the patient to return for them, and were it not that a promise of a cure, or of an alleviation, as the case may be, has been made upon these conditions, it would be very convenient to let him alone without a written notification. This alone makes it worth while to keep the patient in sight, and under treatment. If he does not come, consequently is not cured, he adds to the report of the incurability of the disease, and says that his physician did not perform his promise.

Toward the end of these supplementary courses, the patient's mucous membrane may be so nearly in a normal condition that ordinary exposures will have no ill effect upon this once excessively sensitive membrane, therefore, he may miss a spring or a fall course, or he may pass a year or so, and then require but one or two local applications.

Too much emphasis cannot be laid upon the importance of curing curable cases by the supplementary treatments; and of continuing a few spring and fall treatments of those whose age or the severity of the disease precludes a cure, cases in which a promise of relief only have been promised. The measure of success following my practice in the treatment of this disease, in a large proportion of my patients, justifies me in this course.

The Best Seasons of the year are spring and fall, usually from March 15th to May 15th, and from September 15th to November 15th. These dates are in the changes or variance of temperature, and, I have found from many years careful observation, more persons require treatment at these seasons than during other periods of the year.

The Number of Supplementary Courses.—The age of the patient, which nearly always agrees with the grade of the inflammation, will do much to determine the number of the supplementary treatments at each course, and the number of years that these courses should be repeated, also the number and extent of the growths removed will have a determining influence as to the number of supplementary treatments. A

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boy of fifteen who has required a large number of growths removed from his upper air passages, is in need of a greater number of these courses than a person of even thirty years of age who has not required the removal of abnormal growths.

The Infant may require two to four treatments at the next change of the season after its first course. If it has secretion flowing from the nasal passages, or if it has acquired growths on the tonsils, then certainly it will require a supplementary course. The mucous membrane even at this age will not have completely recovered during the first course of treatment. These treatments are divided among the sixty days that form the season for supplementary treatment.

Children, from the third to the tenth year of age, even with uncomplicated nasal inflammation, may require a few supplementary treatments, usually from four to six of these treatments for one or two seasons, while those who have had growths removed or have had ear complications, will require these treatments for two years at least.

Youths, from ten to twenty years of age, having uncomplicated nasal inflammation will require from five to ten treatments during each supplementary course for two years. A case complicated with growths or with deafness will require two more of these courses. If these supplementary courses are not taken the disease will certainly return, as will the growths, and in a few years the patient will be in as bad a condition as though no treatments had been given, or no growths had been removed.

Adults almost universally have nasal inflammation of so severe a character and so long continued, that they have a large number of nasal growths and many also have growths in the throat, and sometimes in the ears, as well as have lung and other complications. They will require from eight to fifteen treatments at each change of the season for from *three to five years*. It should not be expected that the blood-vessels of the mucous membrane and of the submucous tissues—which have been enlarged to twenty or forty times their normal diameter—would be reduced to their normal diameters by the curative effect of a few months' local applications. Even considering the mucous membrane alone, it is still in an atonic condition;

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and although the inflammation is greatly reduced, and all the former painful symptoms absent, yet the membrane must be maintained in an unirritated state for from *three to five* years before complete recovery can take place, before nature can make complete reparation. It requires this length of time and the correction and protection of the supplementary courses to allow it to regain its normal resisting power; and it will not have done this until its blood-vessels and nerves have returned to their normal condition. As soon as this has taken place, the patient instead of taking cold more frequently than any one around him, will be no more liable to take cold in his nasal passages, throat or ears, than in other organs of his body. This is a positive evidence of his complete recovery; after this no more supplementary courses are required. In case these courses are not taken, the inflammation will certainly commence to increase with the first colds, which are usually taken at the change of the season. If the patient is forty-five years of age or older, the return of growths very seldom takes place, even if the inflammation returns with unusual severity, the extension of the disease is toward other organs, notably the eyes and the brain. If to the former, it is shown by the rapid changes of the anomalies of the vision; if to the latter, it is shown by unusual acts of forgetfulness, unusual irritability of temper, etc. In a very few instances insanity results from the extension of this disease to the brain.

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Necrology.

REPORT OF COMMITTEE ON NECROLOGY.

By H. D. LAWHEAD, M. D., Chairman, Woodland.

Mr. President, and Members of the California State Medical Society:—

With profound thankfulness to the Supreme Preserver, your Committee on Necrology begs to congratulate the Society and itself upon the absence of data—a year without a death is, we believe, unprecedented in the history of this Society. Though, as so impressively put by one of our profession long since departed,

"Life evermore is fed by death,
In earth and sea and sky;
And, that a rose may breathe its breath,
Something must die."

yet, so far as we have been able to learn, Nature's Great Husbandman, in his omniscient economy, has bountifully maintained the animate universe without levying a single life assessment upon our ranks.

For such integral preservation we feel especially grateful when we consider that life in our profession is, at best, rather hazardous.

But our hearts yield their deepest gratitude with the recollection that, while by disease, by exposure and by accident, many of our most worthy members seemed—within the past year—to be within death's dark shadow, their lives are still spared for further good ere they be called to their, we hope, higher, happier, less hazardous and undying life.

Most respectfully submitted by your Committee.

[Dated, April 15th, before knowledge of DR. ANTHONY'S death.]

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SUPPLEMENTAL REPORT.

Is it death? No, but transition.

With that sadness born only of sudden and irreparable loss, we regretfully re-open our report to record this sincere tribute to one of the best known practitioners in our Society.

DR. A. G. ANTHONY was born in Massachusetts. He graduated at the University of Vermont; practiced successfully both in the East and West during over a quarter of a century, and died at his home in Oakland on April 3rd, 1895, at the age of fifty.

That DR. ANTHONY merited and enjoyed an enviable rank in the profession—general as well as local—stands well attested by the facts that he was at one time chosen first Vice-President of this Society; later, he served as President of the Board of Health of the city of Oakland. He was pension examiner at the time of his death. His congenial spirit left its record in his high social standing as a Knight Templar, and member of many other societies.

To his family—a wife, a son and two daughters—we extend profound sympathy, and find consolation in the fact that the influences of the so-called dead, die not, but ever live in their works which are their self-built monuments.

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REPORT OF THE BOARD OF EXAMINERS.

By CHAS. C. WADSWORTH, M. D., Secretary.

Number of meetings held		12
Number of applications (incomplete) on hand April 5, 1894		6
Number of applications received from April 5, 1894, to April 2, 1895, with fee	298	
Applications without fee	3	
For lieu certificate	2	
For additional certificate	1	304
Total applications to be accounted for		310
Original certificates granted to	287	
Additional certificates granted to	1	
Lieu certificates granted to	2	
Applications withdrawn	6	
Applications refused	9	
Applications on hand (incomplete)	5	310

The above summary needs little explanation; in four cases, where certificates were refused, it was found that the applicant had attended less than the required number of courses of lectures; in two, the schools were not recognized, and in four, the credentials presented did not entitle the holder to a certificate.

There have been two arrests made for illegal practice, one in San Jose, to which the Secretary was subpœnaed four times. This is still in Court, unless the case has been allowed to go by default on the part of the prosecuting attorney. The other was the so-called Dr. Plouf. The case was dismissed by the Police Judge, as it was not proven that Plouf "habitually" prescribed.

The number of applicants has been greater than in previous years. This may, to a certain extent, be explained by the fact that the graduating classes from the schools of the State have been larger. Out of 290 certificates granted 108 were upon diplomas from our own California schools.

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FINANCIAL REPORT OF THE BOARD OF EXAMINERS FOR THE FISCAL YEAR ENDING APRIL 2, 1895.

By CHAS. C. WADSWORTH, M. D., Treasurer.

To cash received for 301 applications at $5.00		$1,505 00
To cash received for advertisements 7th Ed. Register		1,425 00
To cash received for Registers sold		195 00
		$3,125 00

DISBURSEMENTS.

By postage	$ 150 00	
By fees returned	75 00	
By stationery and printing	72 35	
By certified copy Articles of Incorporation, State Society	10 00	
By Espina, engrossing certificates	29 00	
By notary fees	1 50	
By incidentals and messenger service	6 75	
By printing Register	800 00	
By wrapping and stamping and interleaving Register	4 50	
By Secretary's salary and office rent	600 00	
By commissions for obtaining ads., typewriter and extra clerical labor in compiling Register	$1,375 90	$3,125 00

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REPORT OF EXECUTIVE COMMITTEE.

Mr. President and Gentlemen of the Society:—

The Committee begs leave to report that it has examined the recommendations contained in the President's address and suggests as follows:

1st. Relative to the appointment of an officer to visit certain sections of the State and perform the initial work of organizing local district societies. That the President be requested to formulate a plan for carrying out this proposition and present it at the next meeting of the Society.

2nd. That a special committee of three be appointed to consider the reduction of fees by corporations and beneficiary societies, and report at the next annual meeting.

3rd. That the President and Secretary be instructed to have published immediately the President's Address, and furnish a copy of the same to every regular practitioner and State and County official of California.

In the matter of the application of the Women's Medical Club of the Pacific for recognition as a "local Society" so that its members may become members of the State Society, your Executive Committee finds:

1st. That the Constitution of said Club does not limit its membership to residents of the State of California as required by our Constitution.

2nd. That it contains no endorsement of the Code of Ethics.

3rd. That it does not make the possession of a certificate or license from the Board of Examiners a pre-requisite to membership.

Your Committee suggests to the Women's Medical Club that it amend its Constitution so that it shall conform to the Constitution of this Society, in which event there will be no objection to granting the recognition desired.

Your Committee has carefully examined the books, accounts and vouchers of the Secretary and Treasurer of the Board of Examiners and finds the same correct, also the accounts of the Committee on Publication.

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The books, accounts and vouchers of the Secretary and Treasurer have also been carefully examined and have been found correct.

Your Committee finds no mention in the Constitution or By-Laws of the Society of Prize Essays, but if custom makes precedent, no prize can be given for other than original work. Reference to the report of the Committee on Prize Essays in 1893, shows that the prize was refused in that year upon this ground. According, therefore, to the opinion expressed by a majority of the Committee on Prize Essays, at the present session, no prize should be awarded this year.

We recommend that the resolution relative to the closing of inter-urban cemeteries and the disposal of the dead be adopted as the sense of the Society.

Also that the Special Committee on State Library be continued.

Also that while we disapprove of the advertising in medical journals of patent and secret remedies, we feel that this matter is in the hands of the trustees of the *Journal of the National Medical Association*, who are answerable to the Association.

It is recommended by your Executive Committee that the President appoint a committee of three to consider, investigate and report upon the paper on "Medical Expert Witnesses" by Dr. Shiels.

HENRY GIBBONS, JR., Chairman.
G. W. DAVIS.

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REPORT OF COMMITTEE ON PUBLICATION.

To the President and Members of the Medical Society of the State of California:

Your Committee on Publication begs leave to say that the Transactions of the Twenty-third Annual Sessions were issued from the printers after considerable unnecessary delay on the part of higher authority than the Committee on Publication. It seems no use to think that everybody will do his duty—if one department is dilatory one year, it probably reforms, and another official or member adds to the delay in the issue of the Transactions.

The cost this year was in excess of previous years, chiefly on account of publication of some extended experiments made upon rabbits with electricity,—the Committee thought this justifiable from a scientific standpoint,—but the net cost was only $630.35.

On account of economy a messenger was employed to deliver copies to San Francisco members.

Copies were mailed to all members outside of San Francisco, and complimentary copies were sent to Honorary Members, to various Medical Journals, Medical Libraries, and to the Secretaries of State Medical Societies as per list published on last two pages of volume XXIV of Transactions.

The total cost was as follows:

Printing and binding	$609.50
Postage and delivery	61.85
Total cost	$670.35

Respectfully submitted,

A. P. WOODWARD,
Chairman.

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REPORT OF SECRETARY.

April, 1895.

Dues collected from April 1, 1894, to March 31, 1895		$1,369.00
Cash received from Committee on Publication		40.00
		1,409.00
By cash paid Treasurer	May 11, 1894	600.00
" " "	June 14, 1894	165.85
" " "	Oct. 17, 1894	512.85
" " "	March 31, 1895	100.00
		$1,378.70
Balance in hands of Secretary		$ 30.30

The roll as it stands corrected up to March 31, 1895, shows 340 active members in good standing.

WM. WATT KERR,
Secretary.

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REPORT OF TREASURER.

For the year ending April 1, 1895.

1894.	RECEIPTS.		
April 1.	To cash on hand	$2,671.71	
May 1.	" " Rec'd from W. Watt Kerr	600.00	
June 20.	" " Rec'd from W. Watt Kerr	165.85	
Aug. 9.	" " Received from Henry Gibbons, Jr., Chairman Sub-Com. on Finance, Com. of Arr. A. M. A. being dividend on subscription	626.95	
Oct. 19.	To cash Rec'd from W. Watt Kerr	512.85	
1895.			
Mar. 31.	" " Rec'd from W. Watt Kerr	100.00	
			$4,677.36
1894.	DISBURSEMENTS.		
June 21.	By H. S. Crocker, banker's case.....(24)	3.00	
	" W. Watt Kerr, postage and registrat'n..(25)	8.10	
	" R. Caldwell, expenses Committee of Arrangements.....(26)	81.50	
	" P. A. Espina, engrossing diplomas....(27)	4.25	
	" Commercial Printing Co., programs,..(28)	31.00	
	" S. Fletcher, collecting.....(29)	38.00	
	" H. Gibbons, Jr., entertainment fund A. M. A.....(30)	2,000.00	
Aug. 10.	" W. A. Woodward & Co., printing and wrapping transactions. .....(31)	609.50	
Oct. 19.	" W. Watt Kerr, commissions on collections paid S. Fletcher.....(32)	1.00	
	" W. Watt Kerr, postage on transactions, paid Committee on Publication.....(33)	61.85	
1895.			
Jan. 26.	" W. A. Woodward & Co., 2-ct. envelopes, Secretary.....(34)	5.50	
	" Jas. H. Parkinson, Secretary Committee of Arrangements, postage.....(35)	5.00	
Mar. 31.	" W. Watt Kerr, salary as Secretary 1894–'95.....(39)	100.00	
			$2,948.70
Mar. 31.	To cash on hand		1,728.66
			$4,677.36

J. H. PARKINSON,
Treasurer.

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Constitution and By-Laws

OF THE

Medical Society of the State of California.

CONSTITUTION.

ARTICLE I.

NAME AND OBJECTS.

SECTION 1. This Association shall be styled "The Medical Society of the State of California."

SEC. 2. The objects of this Association are: To form and constitute a representative body of the regular medical profession of the State of California, to encourage the unity and harmony of the said profession throughout the State, to advance its interest as a body of citizens and a liberal profession, and to promote the advancement of medical, surgical and hygienic science.

ARTICLE II.

MEMBERSHIP.

SECTION 1. The membership of this Society shall consist of Active, Permanent and Honorary Members.

SEC. 2. *Active Members* are such regularly educated physicians as shall possess the qualifications hereinafter specified, and who have been elected to membership upon a report of the Board of Censors at any regular meeting of the Society, in the manner required by the By-laws. They shall pay an initiation or entrance fee, and annual dues, in such amount as the By-laws may provide.

SEC. 3. *Permanent Members* are such as have been active members in good standing in every respect for twenty-five*

*Dr. G. H. Parkinson introduced a proposed amendment to change "twenty-five years" to "forty years," which will be acted upon in 1896.

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years, consecutively; at the expiration of which term their names shall be transferred to the List of Permanent Members, and printed in capital letters in every published list of membership thereafter, and they shall be exempt from the further payment of dues.

SEC. 4. *Honorary Members* are such distinguished persons as the Society may deem worthy of the compliment, and as are especially so selected at any regular meeting of the Society. They shall be elected as the By-laws may require; they shall have no vote at any meeting of the Society, and shall not be subject to the payment of dues.

SEC. 5. The *qualifications* necessary for membership as an active member of this Society shall be as follows, viz:—the acquirement of a regular medical education; a good professional and moral standing in the community where the candidate resides; continuous membership in the regular local medical society of his district, town or county, if there be such a one in active existence; the certificate of the Board of Examiners of this Society; a favorable report upon his candidacy from the Board of Censors of this Society; and *bona fide* residence and practice of his profession within the State of California at the time of making his application, and for six months previously.

SEC. 6. No member of this Society shall be deprived of his membership otherwise than by his own act, except by a concurrent vote of three-fourths (¾) of all the members in good standing present at a regular meeting, or at a special meeting called for that purpose, after a full investigation by the Board of Censors, and an opportunity for the accused to be heard in his own defense. Any member, however, shall be dropped from the roll of membership for two years' non-payment of dues or upon the revocation of his certificate by the Board of Examiners of the Medical Society of the State of California, or on account of expulsion from the local society or an intentional withdrawal from the local society within whose bounds he resides. And any member may be expelled by a nine-tenths vote of all the members in good standing present at a regular meeting, or at a special meeting called for that purpose, on presentment by the Board of Censors, upon the following grounds: Conviction of a felony; willful fraud in his gradua-

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tion or in the credentials on which he was admitted to membership; an openly immoral life; public conduct of extreme indecency, viciousness or cruelty; or such other notoriously irregular conduct as a citizen or a physician, as would make his presence undesirable in the interests of public or professional morality or decency.

SEC. 7. A member may resign his membership, and shall thereupon receive an honorable dismissal, provided that he has paid up all dues to the date of his resignation, and that there are no charges pending against him by presentment of the Board of Censors.

SEC. 8. A member may be dropped from the roll for two years' non-payment of dues, after the lapse of one month from the date of mailing to him, at his last known address, by registered letter, a statement of said dues by the Secretary. A member so dropped may be again admitted to membership by a three-fourths vote of all the members in good standing present at any regular meeting, provided that his arrears of dues are paid up to date of being dropped, and that the Board of Censors recommend his re-admission. A forfeiture of membership by reason of non-payment of dues does not imply the commission of any act of turpitude, and shall not be considered a punishment. The Society shall have the power to remit any member's dues by a three-fourths vote of all the members present at a regular meeting.

SEC. 9. To be in good standing, in the meaning of this Constitution and the By-laws, a member shall not be in arrears for more than one year's dues, and shall be free from any charges whatever by presentment of the Board of Censors, and shall be a member in good standing of the local Medical Society within whose bounds he resides. No member who is not in good standing shall vote or hold office in this Society.

ARTICLE III.

OFFICERS.

SECTION 1. The officers of this Society shall be a President, two Vice-Presidents, a Secretary, two Assistant Secretaries, a Treasurer, five Censors and ten Examiners, of whom three shall be alternates. All the officers shall be elected annually by ballot in open meeting, on such day and in such manner as the

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By-laws may require. They shall each serve for one year from the close of the meeting at which they were elected, or until their successors shall have been respectively elected, or appointed, and qualified. They shall each perform such duties as the Society may, from time to time, require.

ARTICLE IV.

MEETINGS.

SECTION 1. The regular meetings of this Society shall be held annually, at such time and place as the By-laws may require. Special meetings may be held in the manner specified in the By-laws.

SEC. 2. At any meeting of the Society twenty-one (21) members in good standing shall constitute a quorum for the transaction of business pertaining to the membership, funds, or other material interests of the Society. But matters of routine, the reading of scientific or professional communications, and similar matters shall not be interrupted by the absence of a quorum, provided that the session was opened in the presence of a quorum.

ARTICLE V.

SEAL.

SECTION 1. This Society shall have and use one common seal which shall be in the custody of the Secretary; it shall have a suitable device and inscription, and shall be affixed to the official papers, emanating from the Society, to all transcripts from its records issued officially, and to all diplomas of membership.

ARTICLE VI.

BY-LAWS.

SECTION 1. This Society shall adopt such By-laws as it may need for its government and regulation, and which do not conflict with any provision of this Constitution. They shall be published for the information of the members, shall be signed by all the new members, and may be amended at any annual meeting after one day's notice and by a two-thirds vote of all the members in good standing present thereat, and in such manner as they themselves shall require. They may, for some one particular purpose, be suspended temporarily at

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any time by a three-fourths vote of all the members in good standing present, which purpose shall be stated in the motion to suspend.

ARTICLE VII.

ETHICS.

SECTION 1. The Code of Ethics recommended by the American Medical Association, at its meeting held in Philadelphia, in May, 1847, is hereby adopted by this Society, and shall have the full force and effect of an article of the Constitution of this Society, in part or as a whole.

ARTICLE VIII.

CONSTITUTIONAL AMENDMENTS.

SECTION 1. No alteration or amendment shall be made in this Constitution, or in any part thereof, except at an annual meeting following that one at which such amendment shall have been proposed in writing, seconded and read in full, and then only by the concurrence of three-fourths of all the members in good standing present at a sesssion, the hour of which shall have been announced by the presiding officer and posted in the hall for at least one day previous to such final action.

BY-LAWS.

ARTICLE I.

MEETINGS.

SECTION 1. The regular meetings of this Society shall be held annually, commencing on the third Tuesday in April each year, and continuing until adjournment *sine die* by a two-thirds vote of all members in good standing present.

SEC. 2. A special meeting shall be called by the President upon the written request of ten members in good standing, setting forth their reasons therefor, and the object of the call; also whenever in the judgment of the President, Vice-Presidents and Board of Censors, such a meeting is demanded in the interest of the Society. No business shall be transacted at a special meeting except such as is set forth in the written

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request of the callers or in the decision of the officers making the call, which request or decision shall be recorded by the Secretary upon the minutes of the meeting and placed on file in the archives of the Society. Due notice shall be given of all special meetings at least ten days beforehand, by mailing the same to each member in good standing, to his last known address.

ARTICLE II.

MEMBERSHIP.

SECTION 1. The Board of Censors may report once during each session of a meeting of the Society upon applications for membership.

SEC. 2. Upon the receipt of a report from the Board of Censors concerning an application for membership, the report will be read, and the Chairman will then state whether there be a minority report or not, and shall read it if there be one. The Society will then, without debate, proceed to ballot, and the votes being counted, the result will be declared before the next ballot is taken or any other business taken up. A motion to reconsider a vote for membership and take a second ballot must be made and seconded before any other ballot be taken or business taken up. Five negative votes shall cause the rejection of a candidate. Such rejected candidate shall not be again eligible for membership until the next annual meeting of the Society.

SEC. 3. Honorary members may be elected by a unanimous vote of all the members in good standing present.

ARTICLE III.

OFFICERS.

SECTION 1. The President shall preside at the annual meeting next following that at which he was elected, and at all special meetings of the Society during his term of office. He shall preserve order, give the casting vote when a tie-vote occurs, and shall generally perform all other duties devolving on him by the custom and usage of deliberative assemblies. He shall open the annual meeting next succeeding that of his election by an address upon some subject in harmony with the objects and aims of the Society. He shall fill, by appoint-

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ment for the unfinished term, all vacancies occurring among the officers, and shall appoint all members of committees not otherwise provided for.

SEC. 2. The Vice-Presidents shall assist the President in the performance of his duties, when requested to do so by him; and during his absence or disability one of them shall officiate in his place.

SEC. 3. The Secretary shall supervise the recording of the minutes and transactions of the Society and shall authenticate the same by his signature; he shall give notice of the time of all meetings, and shall be, *ex-officio*, a member of Committee on Publication; he shall be charged with the care and preservation of the archives of the Society, and with the distribution of its published transactions. He shall keep the roll of members, collect all dues and fees and turn them over to the Treasurer, giving and taking receipts therefor. He shall, at the close of his term of office, turn over to his successor all books, papers, and other property belonging to the Society in his possession. For the faithful performance of his duties he shall receive an annual salary of one hundred ($100) dollars, except as hereinbefore specified.

SEC. 4. The Assistant Secretaries shall perform such duties as may be assigned to them respectively by the Secretary, and in his absence or disability one of them shall perform his duties, after being assigned thereto by the President, until the return of the Secretary to duty or until the appointment or election of his (the Secretary's) successor.

SEC. 5. The Treasurer shall have charge of the funds of the Society, hold them subject to its disposal, and pay them out on the warrant of the President, countersigned by the Secretary, and in pursuance of a standing or special order, resolution or by-law of the Society. At each annual meeting he shall present an annual report, showing in detail the receipts and expenditures, each sum received and from whom, also each sum disbursed, to whom, and on what account. His report shall be accompanied by vouchers for all disbursements and shall be referred to a special committee for audit as soon as received.

SEC. 6 The Board of Censors shall sit daily during the meetings of the Society, shall examine the credentials of all

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candidates for membership, and shall give a receipt to all candidates for money received. If the said credentials appear to be genuine documents, and in the possession of their rightful owners, and shall conform to the requirements of Section 5, Article 2, of the Constitution of this Society, as to the qualifications necessary for membership therein, the Board shall forthwith recommend said candidates for membership in the Society, except as hereinafter provided, and with any such qualification or recommendation that its members see fit to present to the Society; provided, that in the case of any doubt arising in respect of the genuine character of the documents presented by the candidate, or of his moral or professional character, or of his previous career, the Board may postpone final action in any case until the next meeting of the Socieety, and in the interim shall use diligence to obtain information from every reliable source.

SEC. 7. If, on presentation of the Board of Censors in any case, or cases, there be a minority report from any member thereof, it shall be presented by the Chairman at the same time as the majority report, and all such reports shall be read in full before any action is taken by the Society.

SEC. 8. The Board may satisfy itself regarding an applicant's professional educational qualifications by reference to the records of the Board of Examiners of this Society.

SEC. 9. The Examiners shall constitute the Board of Examiners for the issuance of certificates to regular practitioners, under the Acts of the State Legislature governing the practice of medicine in the State of California. This Board shall present an annual report of its proceedings to the Society, together with a financial statement, showing in *detail*, both its receipts and disbursements during the previous year.

ARTICLE IV.

STANDING COMMITTEES.

SECTION 1. The following entitled Standing Committees shall be appointed annually, in the manner hereinafter provided, viz:

Clinical Medicine, including Diagnostics and Therapeutics.

Pathology and Pathological Anatomy.

Indigenous Botany, Materia Medica, Pharmacy and Medical Chemistry.

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Histology and Microscopy.
Surgery and Surgical Anatomy.
Obstetrics and Puerperal Diseases.
Gynecology.
Medical and Surgical Diseases of Children.
Ophthalmology.
Laryngology, Rhinology and Otology.
Diseases of the Mind and Nervous System.
Medical Jurisprudence.
Medical Topography, Meteorology, Endemics and Epidemics.
State Medicine and Hygiene, and Adulteration of Foods and Drugs.
Dermatology and Genito-Urinary Diseases.
Medical Education and Medical Legislation.
Publication.
Prize Essay.
Necrology.
Executive Committee.
Arrangements.

SEC. 2. Each committee shall consist of not to exceed five members. Both the Chairman and the members of each committee shall be appointed annually by the President elect for the ensuing year. Each committee shall constitute a section, the members of which shall contribute papers upon the subjects germane to their committee. All voluntary contributions shall be placed under the committee to which they properly belong, and the whole shall be read and discussed *seriatim*. Papers of chairmen of committees shall not occupy more than 25 minutes in reading, and all others not more than 20 minutes. The Executive Committee of three members shall serve during the meeting next following its appointment. All matters not relating to the scientific work of the Society, and all new business, shall be referred to this committee, without debate. The committee shall consider the matters referred to it, allowing opportunity for discussion before it, and shall report at any time.

SEC. 3. No paper will be accepted which is in an incomplete condition, nor if written upon both sides of the sheets. No paper which has been previously read or published will be

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received by the Society, but any paper read in the Society may subsequently be published in medical journals, provided that a copy of the paper be filed with the Secretary within two weeks after the meeting at which it was read.

ARTICLE V.

PUBLICATIONS AND COMMUNICATIONS.

SECTION 1. All reports, papers, statistics, etc., presented to the Society shall become thenceforward its property.

SEC. 2. The Committee on Publication shall have full control over all matters published in the annual volume of Transactions, to clip, extract from, and otherwise edit all matter reaching it as "Copy."

ARTICLE VI.

ORDER OF BUSINESS.

SECTION 1. The Order of Business at each annual meeting of the Society shall conform to the following plan, subject at all times to temporary change or suspension at the pleasure of the Society expressed by the vote of a majority of all the members in good standing present; and further subject to such changes for each daily session of the meeting as the Committee on Arrangements shall prescribe.

I. Organization of the meeting.

II. Report of the Committee on Arrangements as to credentials and addresses of members as registered.

III. Report of the Board of Censors.

IV. Calling the roll.

V. Reception of late arrivals, and reading excuses of absentees.

VI. Reception of honorary members.

VII. Reports from Standing Committees, and discussion of same.

VIII. Reception of voluntary communications, and references of same.

IX. Selection of place of next annual meeting and election of officers.

X. Unfinished business.

XI. New business and instructions to Standing Committees.

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XII. Reading of the minutes of the meeting about to close.

XIII. Adjournment.

SEC. 2. *Roberts' Rules of Order* shall govern the deliberations of the Society in all matters of parliamentary usage not made the subject of specification in these By-laws.

ARTICLE VII.

FUNDS.

SECTION 1. The funds of this Society shall be raised by voluntary individual contributions and legacies, by the sale of its publications, by an initiation fee of two dollars, and an annual one of five dollars from each member, which shall be due and payable in advance before adjournment of the annual meeting. Payment of the annual dues shall entitle the paying member to receive one copy of each publication emanating from the Society during that year.

SEC. 2. The funds shall be expended for the various purposes hereinafter specified, namely, for defraying expenses of the annual meetings, publishing the transactions, etc., of the Society, reasonable expenses of the standing committees in furtherance of their respective duties, conducting their correspondence, and procuring material for their respective annual reports, for prizes and rewards of merit, for encouraging scientific investigations and promoting higher medical education, for the establishment of a home for this Society, with laboratories, reading-rooms, etc., and for such other purposes as the Society may from time to time direct, in harmony with the objects of its constitution.

ARTICLE VIII.

DISCIPLINE.

SECTION 1. Members may be disciplined for infraction of the Code of Ethics, or for violation of any special order or resolution of the Society, or its By-laws; and the discipline inflicted may be either—(*a*) reprimand, —(*b*) suspension from the rights and privileges of membership for any definite period,—and (*c*) expulsion from the Society.

SEC. 2. All charges against a member shall be presented in writing over the signature of the accuser, with detailed

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specifications as to time and place, and the names and residences of his witnesses, to the Chairman of the Board of Censors, who shall submit the same to the Board at its next meeting

SEC. 3. The Board of Censors shall consider the charges and specifications, also the reliability of accuser and witnesses, and shall then, by vote, decide either to "entertain" or "not entertain" said charges. In the latter case the charges shall be returned to their author, with the action of the Board endorsed thereupon.

SEC. 4. If the Board decides to entertain the charges, it shall notify the accused, furnish him with a copy of the charges, and specifications, and names of witnesses, and at the same time notify him of the time and place when and where the case will be heard. The accuser must also be notified of the same and instructed to have his witnesses present at the place and time specified. After a full hearing of both sides the Board shall vote upon (1) the guilt or innocence of the accused, and (2) his punishment, if found guilty. The action of the Board shall be kept in strict secrecy, until it has been presented to the Society, which shall be done in the form of a special report, at any regular meeting, or to a special meeting called for that purpose.

SEC. 5. The Society shall thereupon summon the accused to answer in person, at a specified time and place, the presentment of the Board of Censors, and then the accused shall be heard in his own defense, before final action be taken; after which, the room being cleared of all non-members, the Society shall vote by ballot upon (1st) the guilt or innocence of the accused, and (2nd) his punishment, if found guilty; and the votes being counted, the President shall announce the result. A three-fourths vote of all the members in good standing present shall be necessary for any conviction of guilt or infliction of punishment.

ARTICLE IX.

DELEGATES TO THE NATIONAL SOCIETY.

SECTION 1. This Society shall annually elect one delegate for every ten or fraction of ten of its members on the active and permanent lists, to represent it in the American Medical Asso-

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ciation. Each delegate shall receive from the Secretary a certificate of his election as such delegate, which shall be signed by the President or Presiding Officer at said election and duly authenticated by the signature of the Secretary and the seal of the Society.

ARTICLE X.

AMENDMENTS, ETC.

SECTION 1. No alteration or amendment shall be made in any part of these By-laws except at a regular meeting and by a two-thirds ($\frac{2}{3}$) vote of all the members in good standing present; provided, that said alteration or amendment shall have been offered in writing and seconded at a previous session of the same meeting at least one day before, during which time public notice thereof, with the hour of its consideration, shall have been posted in the hall of meeting and announced by the presiding officer from the chair.

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Standing Committees.

Clinical Medicine.—W. W. Kerr, San Francisco, *Chairman;* J. S. Sargent, Santa Rosa; Washington Dodge, San Francisco; J. T. McDonald, San Francisco; R. H. Burke, San José.

Surgery and Surgical Anatomy.—C. L. Bard, Ventura, *Chairman;* T. W. Huntington, Sacramento; D. D. Crowley, Oakland; J. Rosenstirn, San Francisco; J. F. Morse, San Francisco.

Pathology.—Emmet Rixford, San Francisco, *Chairman;* Geo. W. Lasher, Los Angeles; Albert Abrams, San Francisco; D. W. Montgomery, San Francisco; D. C. Barber, Los Angeles.

Diseases of the Mind and Nervous System.—Leo Newmark, San Francisco, *Chairman;* H. E. Sanderson, Stockton; J. W. Robertson, Livermore; A. W. Hoisholt, Stockton; A. M. Gardner, Napa.

Medical and Surgical Diseases of Children.—F. W. D'Evelyn, San Francisco, *Chairman;* H. M. Sherman, San Francisco; Jos. Kurtz, Los Angeles; E. A. Follansbee, Los Angeles; Chas. W. Nutting, Etna Mills.

State Medicine and Hygiene and Adulteration of Foods and Drugs.—H. S. Orme, Los Angeles, *Chairman;* J. R. Curnow, San José; G. F. Hanson, San Francisco; J. H. Bullard, Anaheim; A. W. Perry, San Francisco.

Gynecology.—Beverly MacMonagle, San Francisco, *Chairman;* Clinton Cushing, San Francisco; W. A. Edwards, San Diego; H. Kreutzmann, San Francisco; Charlotte B. Brown, San Francisco.

Obstetrics.—C. A. von Hoffmann, San Francisco, *Chairman;* G. W. Davis, San Francisco; J. Q. Wrenn, Placerville; G. P. Reynolds, Alameda.

Microscopy and Histology.—J. H. Stallard, San Francisco, *Chairman;* J. C. Spencer, San Francisco; Lulu T. Ellis, Los Angeles; C. G. Levison, San Francisco; Emma S. Merritt, San Francisco.

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Indigenous Botany, Materia Medica, Pharmacy and Medical Chemistry.—W. P. Gibbons, Alameda, *Chairman;* R. S. Markell, Cloverdale; J. T. Stewart, Merced; T. M. Todd, Auburn; B. W. Day, San Diego.

Publication.—A. P. Woodward, San Francisco, *Chairman;* S. R. Mather, San Francisco; W. W. Kerr, San Francisco; H. E. Sanderson, Stockton.

Medical Topography, Meteorology, Endemics and Epidemics.—R. F. Rooney, Auburn, *Chairman;* H. D. Robertson, San Francisco; T. E. Taggart, Bakersfield; W. J. G. Dawson, St. Helena; K. D. Shugart, Riverside.

Necrology.—L. E. Felton, Hanford, *Chairman;* H. N. Rucker, Oakland; G. I. Cason, Colusa; E. E. Stone, Marysville; F. D. Bullard, Los Angeles.

Dermatology and Genito-Urinary Diseases.—Geo. Chismore, San Francisco, *Chairman;* M. Regensburger, San Francisco; G. J. Bucknall, San Francisco; G. C. Simmons, Sacramento; F. Dudley Tait, San Francisco.

Prize Essay.—J. H. Utley, Los Angeles, *Chairman;* D. W. Montgomery, San Francisco; Wm. Fitch Cheney, San Francisco.

Ophthalmology.—Kasper Pischl, San Francisco, *Chairman;* H. I. Jones, San Francisco; W. E. Briggs, Sacramento; R. L. Cox, San Francisco; A. F. Darling, Los Angeles.

Laryngology, Rhinology and Otology.—W. E. Hopkins, San Francisco, *Chairman;* J. D. Arnold, San Francisco; M. H. Woolsey, San Francisco; M. C. O'Toole, San Francisco; H. L. Wagner, San Francisco.

Medical Jurisprudence.—Chas. N. Ellinwood, San Francisco, *Chairman;* W. S. Thorne, San Francisco; R. L. Rigdon, San Francisco; C. G. Kuhlman, San Francisco; S. B. P. Knox, Santa Barbara.

Medical Education and Medical Legislation.—R. H. Plummer, San Francisco, *Chairman;* H. H. Hart, San Francisco; A. H. Pratt, San Francisco; J. R. Laine, Sacramento; Chester Rowell, Fresno.

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Executive Committee.—W. R. Cluness, San Francisco, *Chairman*; G. L. Simmons, Sacramento; Henry Gibbons Jr., San Francisco.

Committee of Arrangements.—W. G. Cochran, Los Angeles, *Chairman*; J. H. Davisson, Los Angeles; W. D. Babcock, Los Angeles; Walter Lindley, Los Angeles; H. Nadeau, Los Angeles.

Special Committee on Library.—W. A. Briggs, Sacramento.

Special Committee on Organization of Local District Societies.—G. L. Simmons, Sacramento.

Special Committee on Expert Witnesses.—Geo. Franklin Shiels, San Francisco; Jas. H. Parkinson, Sacramento; F. W. D'Evelyn, San Francisco.

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Active Members.

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Adam, George	114 Phelan Building,	"
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Allen, Cyrus H	Centerville,	California
Anderson, Winslow	603 Sutter St.,	San Francisco
Anderson, W. D	Vallejo,	California
Anderson, W. O.	Eureka,	"
Armistead, Howell V	Newman,	"
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Bard, C. L	Ventura,	California
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Bazan, F. Z	415 Sutter St.,	"
Bazet, L	18 and 22 Phelan Bld'ng,	S. F.
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Boyce, John F	Santa Rosa,	"
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Brown, Charlotte B.	1212 Sutter St.,	"
Brune, A. E	1106 Market St.,	"
Bucknall, George J	330 Sutter St.,	"
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Burke, R. H	San José,	California
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Clark, E. S	16 Geary,	"
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Ellis, Lula T	107 N. Spring St.,	"
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Fenn, Charles M	San Diego,	"
Field, Edna R	1230 Geary St.,	San Francisco
Fife, John	Red Bluff,	California

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Haynes, J. R.....929 S. Main St., "
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Hopkins, W. E.....533 Sutter St., San Francisco
Howard, Kate I.....334 O'Farrell St., "
Howard, S. D.....818 Larkin St., "
Hudson, A. T.....Stockton, California
Huntington, Thomas W.....C. P. R. R. Hospital, Sacramento
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MacMonagle, Beverly	Crocker Building,	"
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Mather, S. R.	406 Sutter St.,	"
Mayer, O. J.	435 Geary St.,	"
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Mays, W. H.	903 Sutter St.,	San Francisco
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Medlock, J. R.	Santa Ana,	"
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Merritt, Geo. W.	928 Sutter St.,	"
Meyers, Robert C.	Union & Powell Sts.,	"
Montgomery, Douglass W.	1124 Sutter St.,	"
Montgomery, John	336 Bush St.,	"
Moody, Mary W.	2520 Howard St.,	"
Morse, John F.	200 Stockton St.,	"
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Rattan, Frank.....Antioch, "
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Reynolds, R. G.....Upper Lake, "
Richmond, G. B., Jr.....Salinas, "
Richter, C. Max.....614 Geary St., San Francisco
Rierson, R. L.....Dixon, California
Rigdon, R. L.....Nucleus B'ldg, 3rd & Mkt., S. F.
Rivas, Isaac.....1509 Washington St., "
Rixford, E.....229 Geary St., "
Robertson, Henry D.....705 Sutter St., "
Robertson, John W.....Livermore, California
Rohr, S. M.....Windsor, "
Rooney, Robert F.....Auburn, "

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Rowell, H. N.	Berkeley,	"
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Sanderson, H. E.	Stockton,	"
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Sargent, J. S.	Eureka,	California
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Simpson, J. A.	Cor. Kent'ky & Butte Sts.,	"
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Smith, H. Watson	Benicia,	"
Smith, Robert P., Jr.	Santa Rosa,	"
Sobey, Arthur L.	810 20th St.,	San Francisco
Somers, George B.	133 Larkin St.,	"
Southard, W. F.	603 Sutter St.,	"
Spencer, J. C.	Crocker Building,	"
Stallard, J. H.	636 Sutter St.,	"
Stewart, J. T.	129 W. 2nd St.,	Los Angeles
Stillman, S.	229 Geary St.,	San Francisco
Stoneberger, A. A.	439 Third St.,	"
Strader, H. W.	K and 6th Sts.,	Sacramento
Stuart, Anabel McG.	Santa Rosa,	California
Sullivan, James F.	1105 Van Ness Ave.,	San F'ncisco
Swan, Benjamin R.	222 Sansome,	"
Tabler, L. J.	Anderson,	California
Taggart, C. F.	Tulare,	"
Taggart, T. E.	Yuma,	Arizona
Tait, F. Dudley	326 Geary St.,	San Francisco
Taylor, A. H.	422 Ellis St.,	"
Taylor, Albert M.	13th and Clay Sts.,	Oakland
Taylor, William E.	215 Geary St.,	San Francisco

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Taylor, William S.	Livermore,	California
Tebbetts, James H.	Hollister,	"
Thayer, J. W.	Gilroy,	"
Todd, F. Walton	Coronado,	"
Tooley, L. P.	Willows,	"
Trask, S.	321 Geary St.,	San Francisco
Tuggle, S. P.	302 Stockton St.,	"
Utley, J. H.	147 S. Main St.,	Los Angeles
Vivian, G.	San Leandro,	California
Von Buelow, F.	11th and Mission Sts.,	S. F.
Von Hoffmann, C. A.	1014 Sutter St.,	San Francisco
Voorhies, A. H.	707 Sutter St.,	"
Vowinckel, F. W.	cor Sutter & Van Ness,	"
Wadsworth, C. C.	518 Sutter St.,	"
Wagner, H. L.	506 Sutter St.,	"
Wagner, John	483 Valencia St.,	"
Wanzer, Lucy M. F.	205 Taylor St.,	"
Webster, L. R.	1229 Franklin St.,	Oakland
Wefelsburg, A. B. von	806 Jones St.,	San Francisco
Welges, L.	Woodland,	California
Westlake, George W.	Red Bluff,	"
Whitwell, William S.	Mills Building,	San Francisco
Wiard, W. F.	Sacramento,	California
Widney, Joseph P.	Widney Block,	Los Angeles
Wills, W. Le M.	127 W. First St.,	"
Winterberg, W.	1132 Sutter St.,	San Francisco
Winton, H. N.	922A Sutter St.,	"
Williamson, J. M.	21 Powell St.,	"
Wood, T. D.	Palo Alto,	California
Woodward, A. P.	21 Powell St.,	San Francisco
Woolsey, Elliott H.	12th & Broadway Sts.,	Oakland
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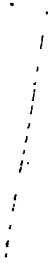

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